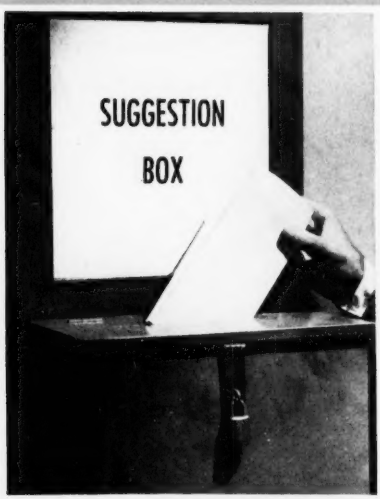
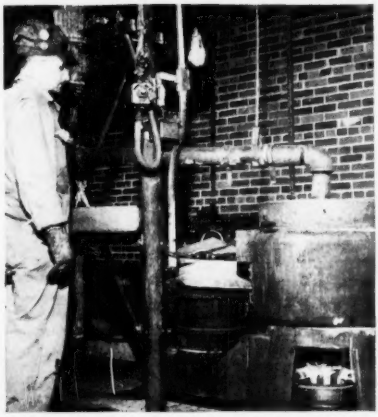
Chemical Week

September 8, 1951 Price 35 cents





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Barium compounds slated to ease as output is upped, video cut back ..... p. 39

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AROUND THE CLOCK AROUND THE CALENDAR

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fmc

Chemical Week

Volume 69 Number 10

September 8, 1951

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FACTS about ETHYLENE and PROPYLENE OXIDE

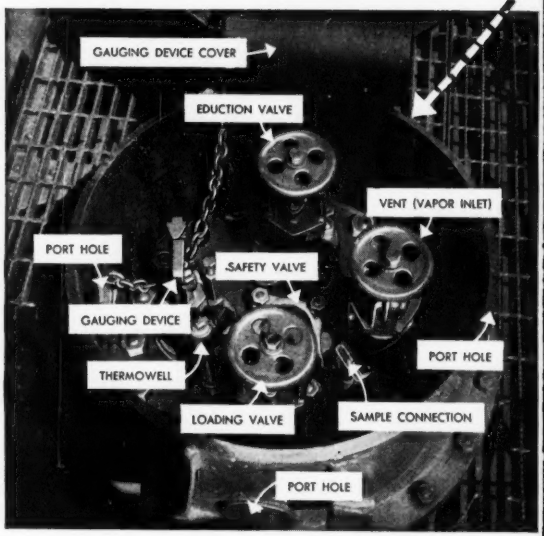
Today, more than ever, chemical materials should be used wisely and efficiently. The importance of Ethylene Oxide and Propylene Oxide to many industries has led Dow to believe that the following information may be of assistance in helping you realize greater value from these oxides.

Practically every major industry uses Ethylene Oxide or one of its many derivatives. Because Ethylene Oxide reacts with many other chemicals including fatty acids, phenols, alcohols and water, it is a basic component in many products. Ethylene Oxide is used in the manufacture of detergents . . . permanent antifreeze . . . cosmetics and bread conditioners. Propylene Oxide reacts with acids to form esters and with phenols to form phenoxy alcohols. In addition to the use of Propylene Oxide as an intermediate, it may be used as a low boiling solvent for cellulose acetate, nitrocellulose, vinyl resins, natural resins, hydrocarbons and as a sterilizing agent or product to inhibit the action of yeasts and molds.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

PROPERTIES

	Ethylene Oxide	*Propylene Oxide*
Molecular Weight	44.0	58.1
Boiling Point	51.3°F.	95.0°F.
Freezing Point	−168.2°F.	−169.6°F.
Flash Point (TAG Open Cup)	below −4.0°F.	below −21.0°F.
Fire Point (TAG Open Cup)	below −4.0°F.	below −21.0°F.
Specific Heat, Btu/(lb) (°F.)	0.44	0.47
Heat of Vaporization (1Atm), Btu/lb.	245.0	213.2
Specific Gravity	$0.896^{32°F.}$	$0.826^{68°F.}$
Refractive Index	$1.3614^{39.2°F.}$	$1.363^{77°F.}$
Explosive Limits (% Volume in Air)	2—100	2.1—21.5
Water Solubility, g/100g at 77°F.	∞	59
Alcohol Solubility	∞	∞
Ether Solubility	100	∞



Unloading Tank Cars of Ethylene Oxide or Propylene Oxide

1. The tank car should be accurately spotted on level track, the brakes applied, wheels blocked and appropriate caution signs displayed.
2. Attach approved ground connections to tank car before any contact is made with unloading equipment.
3. Attach inert gas line to vent valve of tank car and attach unloading line to eduction valve. Attach pressure gauge to loading valve. (These lines should be flexible steel with steel fittings. Wrenches and other tools used around Ethylene or Propylene Oxide should be made of nonsparking metals.)
4. Open loading valve to activate pressure gauge.
5. Open vent valve slowly and apply inert gas pressure to car to force Oxide into pump suction and to keep vapor phase of

This is one of a series of Dow advertisements you may wish to keep on file for reference and information. Write Dow for reprints.

Unloading Tank Cars (Cont'd)

tank car out of flammable range. A rotary pump is recommended for transfer of these materials.

6. When sufficient pressure has built up (about 35 psig) open eduction valve. This valve must be opened slowly so that excess flow check valve does not close.
7. Vent storage tank into which the Oxide is being pumped back into the tank car through the inert gas line. (The attachment of this vent line to the inert gas line must be made downstream from the compressor.)
8. When tank car has been unloaded, close valves and detach unloading lines. Care should be taken to allow no air to enter tank car. The car, containing principally inert gas, is then ready for return to Dow.

Handling Precautions:

Ethylene Oxide and Propylene Oxide are similar in many respects. Generally speaking, Ethylene Oxide is more reactive and more toxic than Propylene Oxide; however, the same general precautions should be applied to handling and working with both these chemicals.

Ethylene Oxide and Propylene Oxide are highly flammable and highly reactive. Every precaution should be taken in handling these materials to avoid any source of ignition. Explosion-proof motors and other electrical equipment including pumps, piping, storage tanks, and compressors should be well grounded.

No copper or copper base alloys or any other acetylide forming metals should be used in contact with Ethylene Oxide or Propylene Oxide. All equipment used should be free of acids, bases, salts and water since most of these act as poly-condensation catalysts. Oils, grease, dirt, air, sulfur, ammonia and hydrogen sulfide should also be excluded from contact with Ethylene Oxide and Propylene Oxide.

All new equipment or equipment which has been out of service should be thoroughly cleaned, dried and purged with an inert gas (i.e. Nitrogen or Methane) before being put into Ethylene Oxide or Propylene Oxide service. A blanket of inert gas should be kept on the Oxides to keep the vapor phase out of the flammable range.

Ordinary steel is acceptable for storage tanks and pipe lines. This equipment should be constructed to withstand an operating pressure of at least 50 psi. and should be insulated and provided with proper cooling equipment.

Toxicity:

Ethylene and Propylene Oxides should be considered hazardous chemicals in both their liquid and vapor forms. The prolonged single exposure to gas concentrations of but a few parts per million can have adverse effects, and regular daily exposure to low concentrations should be avoided. The principal toxic effect resulting from inhalation is thought to be an irritation of the lungs which may produce, after several hours, inflammation and tissue destruction leading to pneumonia.

The following symptoms should be taken as evidence of excessive exposure: irritation of the eyes, nose and throat, headache, nausea, vomiting and weakness.

For emergency protection a full face gas mask with canister for organic vapors, or an air supplied respirator are suitable.

In the event of exposure, the casualty should be immediately removed from further exposure and placed under medical care. If liquid Ethylene Oxide or Propylene Oxide is spilled upon the person, all contaminated clothing should be removed at once and the affected area washed for several minutes with running water. Prolonged contact with the skin can cause severe blistering.

It is recommended that anyone who may be subject to exposure to Ethylene Oxide or Propylene Oxide be equipped with face shield, rubber gloves and other protective clothing.

WRITE DOW FOR INFORMATION AND TECHNICAL ASSISTANCE.

The Dow Chemical Company, Dept. OC-25,
Midland, Michigan

☐ **Please send me additional information about Ethylene Oxide and Propylene Oxide.**

☐ **Please send _____ reprints of this advertisement.**

Name _____ Title _____

Company _____

Address _____

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OPINION . . . . . .

Cortisone Patents

To the Editor: I enjoyed very much your article "Cortisone Conquered" (August 18). It presents a clear picture of the situation with one small exception.

The patents arising from the Harvard work will be administered by Research Corporation, not The National Research Corporation.

A minor point concerning company names which are frequently confused, but I would like to put the record straight.

J. W. Hinkley
Vice President
Research Corp.
New York, N. Y.

Numbers Game

To The Editor: . . . Your Aug. 25th issue, page 8, col. 2, par. 2, says in effect that $10 - 1 = 8$. [*"The Morgantown facilities were included in the* ten *plants built during the war for the production of synthetic nitrogen and derivatives. One of these, at Muscle Shoals, Ala. is operated by the TVA; the other* eight *are now either owned or operated by private industry."*–Ed.]

In case some careful reader takes you to task for this bit of arithmetic, here is your defense:

Any two numbers, say a and b, one of which appears to be larger than the other, can be shown to be equal. Thus: let a be the larger and b the smaller number, the difference being c. Then,

$$a = b + c$$
Multiply by $a - b$
$$a^2 - ab = ab + ac - b^2 - bc$$
Rearrange
$$a^2 - ab - ac = ab - b^2 - bc$$
Divide by $a - b - c$
$$a = b \quad \text{Q.E.D.}$$
Therefore $2 = 1$ and
$$10 - 1 = 8$$
as claimed by CW.

If any of your readers doubt the validity of your proof, here is another way of proving that any number, a, is equal to any other number, b, and therefore $2 = 1$. Thus:

Write the equation
$$(x - a)^3 = (x - b)^3$$

It may seem that it has been assumed that $a = b$, but this is not the case for the equation has a real root, viz., $x = \frac{1}{2}(a + b)$

However:
Extract cube root
$$x - a = x - b$$
Therefore
$$a = b$$
Therefore $2 = 1$
Therefore
$$10 - 2 = 10 - 18 \text{ or } 9,$$
as you please. Or,
if anyone still insists that
$10 - 2 = 8$ and
$10 - 1 = 9$ then,
per above demonstration,
$8 = 9$
and $10 - 1 = 8$ anyhow.

There still may be some of your readers who doubt that
$$8 = 9$$
If so, ask them to write down the equation
$$5 + \frac{9x - 60}{8 - x} - \frac{4x - 20}{9 - x} = 0$$
This is no fanciful equation for if $x = 5$
$$5 - 5 = 0$$
Which is generally admitted to be true.

However, the equation in x may be reduced to
$$\frac{4x - 20}{8 - x} = \frac{4x - 20}{9 - x}$$
and therefore
$$8 = 9$$

Q.E.D.
Harry A. Curtis,
Knoxville, Tenn.

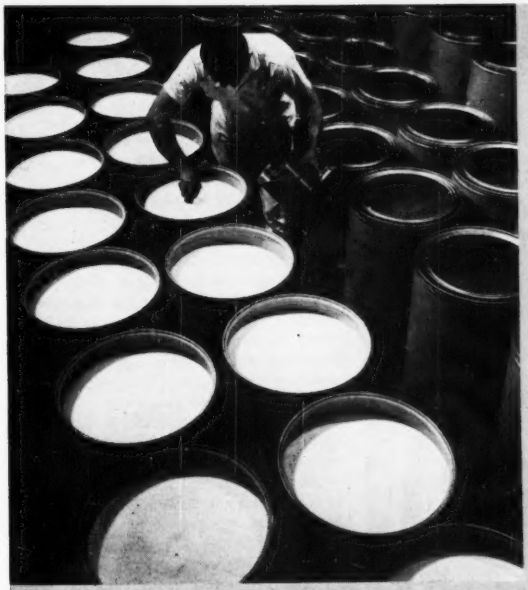
Reader Curtis (top director of TVA and eminent chemical engineer who helped build TVA's first synthetic ammonia plant) has given CW a priceless defense for future arithmetical blunders. We'll have to save it though, because Morgantown plus Muscle Shoals plus the eight others cited tally out to a neat ten.–Ed.

Safe Sanitizer

To The Editor: . . . I was very much surprised and disturbed to find that the tabulation of chemicals in your June 30 issue contained a critical and damaging reference to Roccal. Without clarification, it is stated under the F.D.A. comment concerning Roccal that it is "unsafe."

. . . I gather that what is really intended is that Roccal and quaternary ammonium salts be listed as "unsafe in foods" . . . but it was curtailed to "unsafe." . . .

It seems to me that the word was unfortunately chosen. Even if a trace of Roccal–which is a quaternary ammonium germicide–should accidentally appear in food products, such products should not be regarded as "unsafe" for human consumption al-



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OPINION . . . . . .

though under the Food and Drug Regulations they could be classified as adulterated.

Roccal is "use-dilutions" as employed for sanitizing purposes in the food industry is not toxic. . . It has been shown (Dr. H. V. Alfredson, Scientific Edition, *Journal American Pharmaceutical Association*, June, 1951) that alkyldimethylbenxyl ammonium chloride (Roccal) was nontoxic to rats when fed over their life span in aqueous solutions as concentrated as 0.25%. That . . . is 12½ times the concentration employed for sanitizing food equipment . . . the quantity fed the rats per kg. of body weight is relatively enormous. . .

Despite the fact that this and other reports . . . show that Roccal is nontoxic in "use–dilutions" . . . it is never recommended that it be added to food products. Its function is to kill bacteria on equipment etc. . . . to lessen the danger of food contamination with harmful micro-organisms.

. . . I feel it is entirely unfair to state that it is "unsafe" . . . instead it should be stated that it is entirely safe to use as a sanitizing agent when the manufacturer's directions are followed. . . Officials of the Food and Drug Administration have informed us that they do not oppose the use of Roccal as a sanitizing agent when it is used as directed . . .

R. C. SHERWOOD
Technical Director
Sterwin Chemicals, Inc.,
New York, N. Y.

Thank you, Reader Sherwood. Tabulations are convenient, present data compactly. But they can, as you point out, favor ambiguity.—ED.

The Rains Came

TO THE EDITOR: . . . I'm curious. Has anyone mentioned your slip in spelling in the Aug. 11 Newsletter . . . in which you talk about the "damned-up" rains?

It's the Missouri-Kansas Rivers that have been having "damned-up rains" recently . . . not those of the Pacific Northwest!

L. C. STEWART,
Syracuse, N. Y.

Keen-eyed reader score to date: half dozen phone calls, 31 letters.—ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.

NEWSLETTER

The chemical industry has put a lot of beef on its bones during the past couple of years, and now down-to-earth figures point to a continuing rapid expansion next year—and probably for several years hence.

McGraw-Hill's annual survey of business expectations uncovered plans for a 143% boost in capital outlay this year as compared with 1950. Now, up-to-the-minute queries show that half the chemical firms have revised their first-of-the-year estimates—and revised them upwards.

New products and defense needs create expansion pressure.

But uncertainty about future tax and amortization policies cast a pall of doubt over definite actions. Decisions from Washington may slow, but won't stop additional projects.

Where is the money coming from? Mostly retained earnings, but some companies will borrow or sell stock.

It sounds merely like an exercise in semantics—but the Office of Price Stabilization's action in reclassifying some products from chemicals to minerals will ease paper work.

Chemicals affected are refined salt; sodium silicofluoride; non-petroleum butadiene; channel, furnace and thermal carbon black; and (when derived from wood distillation) pyroligneous acid, acetic acid, calcium acetate and methyl alcohol.

As chemicals they came under CPR-22, but as non-metallic minerals they will come under the General Ceiling Price Regulation. Since CPR-22 has not yet gone into effect, the decision will not alter the present ceiling price. The important practical effect: It will relieve producers of the necessity to file for ceilings under CPR-22.

A lot of chemicals have moved from Group I ("in very short supply") to Group II ("balanced supply-demand") in National Production Authority's guide for private, Government and military purchasing—"List of Basic Materials and Alternates."

A new, second issue ascribes easier availability to acetylene, aniline, boric acid, calcium carbide, carbon black, formaldehyde, glycerine, lead chromite and ethylene dichloride. Nitrogen gas moved from Group II to Group III ("in fair-to-good supply").

Among alternates that have been adopted to by-pass shortages: mica paper for split mica; reinforced plastics for all-weather use; stainless-clad equipment for solid stainless.

Elemental phosphorus capacity has shot upwards in this country, but it's also booming in Canada. Electric Reduction Co. of Canada, Ltd., sole Canadian maker of trisodium phosphate and polyphosphate, has started construction of two 18,000 kva furnaces at Varennes, Que.

The new $4-$5 million installation, scheduled for completion in 1953, will supplement capacity at Buckingham, Que., where phosphate and sodium chlorate output is now being upped.

Carbide and Carbon's ethanol expansion is going in at Institute W. Va. . . . and Foster-Grant Co., Inc. is thinking about making styrene in Texas to supply its plastics plant at Leominister, Mass.

NEWSLETTER

Shortage of chemical tank cars occupied the spotlight at a meeting last week of the industry advisory committee with NPA officials.

Everyone agrees that the recent allocation of steel for car construction—as reported in CW—will lick the shortage by next May or June. Big problem is what to do in the meantime.

Chemical suppliers have been encouraging customers to keep their cars on a siding, draw from them as needed. This was a "sales pitch."

Now they're sorry they ever thought of it. In fact, industry now wants the Government to rule that tank cars must be unloaded and on their way back to suppliers within three days. The onus of ill will would thus rest on the Government, not on the suppliers.

But Government legal eagles found a flaw, discovered that they'd have to insist that suppliers observe the same three-day rule.

The whole idea was then dropped; it looks as if hopefulness, crossed fingers and gentle prodding will be the order of the day.

Tangles like the tank car situation point up the fact that NPA's chemical division has one of the toughest jobs in the entire Government set-up—and it's getting tougher every day.

Making it worse is the difficulty of getting top-notch men to administer the program. Chemical companies are expanding rapidly, holding on to their administrative talent.

Chemical Chief Kenneth Klipstein hopped to New York just to plead with top managements to let their men come to Washington. His cogent argument: Only industry-trained men can sensibly handle chemical complexities on the Government level.

The very complexity of the chemical industry—and the setbacks it receives as a result of legislative and administrative misunderstanding of it—is sharpening industry leaders' awareness of the need for a sound, educational public relations job to bring home the facts: (1) the size and importance of the industry; and (2) the complicated, intertwined structure of the industry that makes it impossible to apply yardsticks, rules, and easy "cure-all" edicts.

Chemicals in cosmetics are currently the cynosure of the Food & Drug Administration's eyes.

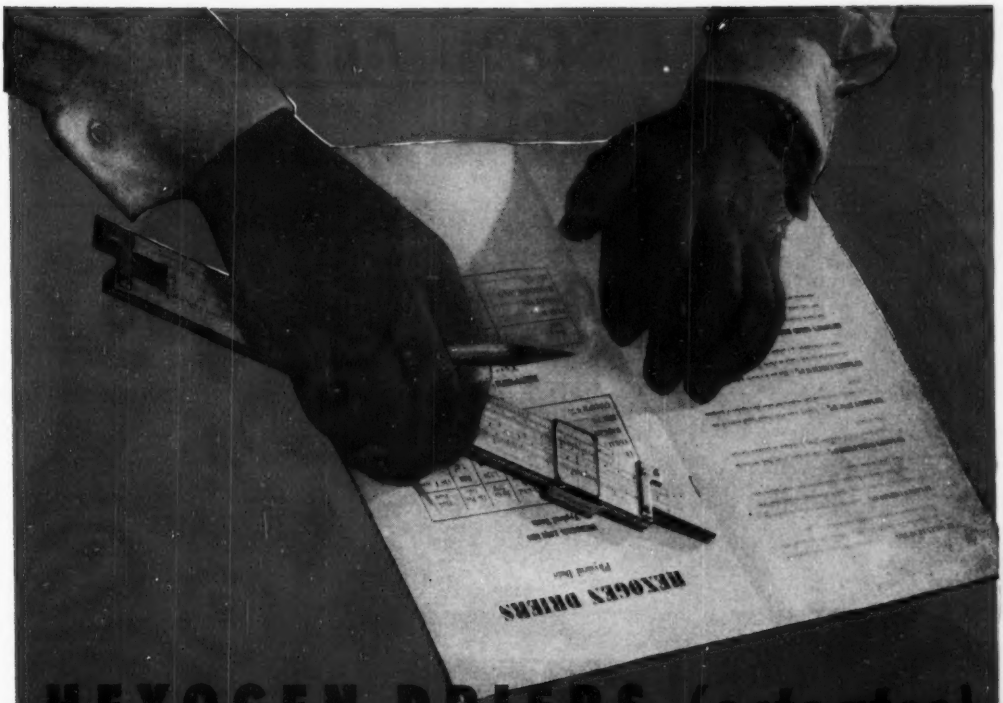
Two shampoo formulations were recently seized on complaints that they caused eye injury. The makers: Fairfield Laboratories, Plainfield, N.J., and Curley Co., Philadelphia. Neither is sold over-the-counter; both are used by beauty parlors and sold house to house.

Both contain quaternary ammonium germicides in addition to other (probably non-ionic) surface-active agents. And both are being withdrawn and recalled by the makers.

FDA says these actions don't presage a wide-scale investigation of surface-active agents in cosmetics; but it admits that it is going to be "very nosy" about any detergent material that might get into eyes.

Renting is a better deal, thinks Esso Standard Oil. The company erected an office building at Baton Rouge, La., just last year, has now sold it to an insurance company and signed up for a long-term lease.

. . . The Editors



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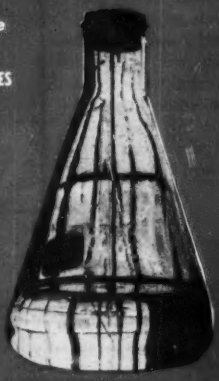

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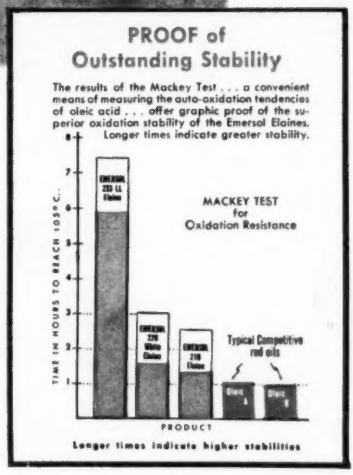
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Ecclestone Chemical Co., 2673 Guoin, Detroit 7, Mich.

CHEMICAL COMPANY EARNINGS — 1ST HALF 1951

	Gross Sales		Pre-Tax Earnings		Taxes				Net Earnings	
	1951	1950	1951	1950	1951		1950		1951	1950
Air Reduction Co.	58,231	46,014	9,748	8,390	5,999	61.5%	2,544	40%	4,244	3,846
Allied Chemical & Dye Corp.	251,632	194,085	58,059	33,867	35,977	62	14,972	44	22,082	18,894
American Agricultural-Chemical Co. (a)	25,131	19,098	6,009	4,780	2,950	49	1,725	36	2,909	3,005
American Cyanamid Co.	200,915	144,247	*51,455	26,698	28,000	54	13,800	52	23,455	12,898
Atlas Powder Co.	26,009	19,350	3,167	1,836	1,998	63	684	37	1,169	1,152
Commercial Solvents Corp.	30,223	15,232	7,265	2,155	4,158	57	838	39	3,108	1,319
Davison Chemical Corp. (a) (E)	26,349	21,943							1,567	1,660
Diamond Alkali Co.	38,959	27,680	9,749	4,376	6,022	62	2,078	47	3,727	2,298
Dow Chemical Co. (b)	195,405	119,183	62,313	25,800	40,963	66	10,318	38.5	21,191	18,680
E. I. du Pont de Nemours & Co. (c)	769,999	580,889	249,883	161,856	171,300	69	70,730	44	78,563	91,126
Hercules Powder Co.	113,517	73,518	21,952	10,691	14,114	64	4,255	40	7,838	6,436
Heyden Chemical Corp.	15,767	13,339	3,638	1,618	2,157	59	683	42	1,481	934
Hooker Electrochemical Co. (a)	19,974	12,480	5,734	2,953	3,560	62	1,065	38	2,174	1,788
International Minerals & Chemical Corp. (a)	66,256	58,402							6,514	5,777
Mathieson Chemical Corp.	48,009	38,677	12,774	6,940	7,205	56	2,530	36	5,569	4,410
Monsanto Chemical Co.	139,743	102,705	34,277	22,192	21,581	63	9,856	44	12,696	12,337
National Cylinder Gas Co.	17,073	12,955							1,447	1,194
Nopco Chemical Co.									751	451
Newport Industries, Inc.	12,255	7,257	3,062	530	1,843	60	202	38	1,219	329
Pennsylvania Salt Manufacturing Co.	25,191	19,432							2,486	2,068
Chas. Pfizer & Co.	43,584	25,602	20,391	6,893	13,738	67	2,905	42	6,652	3,983
Pittsburgh Coke & Chemical Co.	24,937	16,193	5,260	2,019	3,353	64	686	34	1,907	1,333
Rohm & Haas Co.	58,972	38,181	13,486	6,152	9,428	70	2,493	40.5	4,040	3,659
Union Carbide & Carbon Corp.	458,308	330,841	140,994	97,551	82,768	59	36,746	38	58,228	60,805
Victor Chemical Works	16,696	14,929	4,209	3,337	2,707	64	1,720	51.5	1,502	1,723
Virginia-Carolina Chemical Corp. (a) (E)	51,500	30,230							4,174	2,986
26 Company Total	2,733,668	1,980,462	723,385	429,329	459,817	63.6%	180,848	42.1%	280,893	264,839
Total—except Du Pont	1,963,679	1,399,573	473,522	267,473	288,517	60.9%	110,118	41.2%	202,130	173,713
Du Pont as a % of the 26	28.2%	29.3%	34.5%	37.7%	37.3%		39.1%		28%	34.4%

Increase in total taxes for the 20 companies reporting taxes, 154%; excluding Du Pont, 182%.
(a) Final six months of fiscal year ended 6/30/51; may include year end adjustments.
(b) Final six months of fiscal year ended 5/31/51; may include year end adjustments.
(c) Excluding net dividend income of $39,839,191 in 1951 and $31,053,313 in 1950.
(d) 2nd and 3rd quarters of fiscal year ending November 30, 1951.
(E) Estimated.
* Includes non-recurring dividend of $5,880,000 out of accumulated earnings of Southern Alkali Co. subsequently sold to Pittsburgh Plate Glass Co. Allowing for lower tax on dividend income, effective tax rate on earnings from operations was the 62% ceiling rate.

Tax Bite Digs Deeper

Uncle Sam put the tax bite on chemical companies to the tune of nearly $500 million in the first half of 1951—up 50% from 1950.

Despite this huge increase, profits for the first half of 1951 were up nearly 6% over 1950—but the picture darkens quarter by quarter.

The chemical industry now represents one of Uncle Sam's juiciest tax victims. In the first half of 1951 Federal income taxes paid by chemical companies were up over 150%—from $180 million in the first six months in 1950 to approximately $460 million for the corresponding period for this year. Despite this large hurdle, net earnings moved up 6% to a new record of $280 million.

But these overall figures for the half obscure how tough it is to make a dollar—one that will not end up in the tax collector's jeans. The 6% increase is provided almost wholly by the rise that took place in the first quarter of this year. When the profits for the second quarter of 1951 are compared for those produced by 1950's operation, a slight decrease—less than $1 million—is evident.

Look at Du Pont: The above is true for an analysis that includes the results attained by the largest chemical company, E. I. du Pont de Nemours & Co. But Du Pont looms so large on the chemical horizon (28% of net sales and net profits in the first half of 1951) that one must move with caution when Du Pont's earnings show a decided change from the previous year. And change they did. Net earnings from operations dropped $12.5 million to $78.5 million for the first six months of 1951.

Another point of caution: The usual figures for Du Pont's earnings include the sizable income contributions from its General Motors holdings. This was up $10 million from the 1950 six months' total of $30 million. This addition held common stock earnings to a drop of only nine cents per share, from $2.50.

The drop in Du Pont's chemical earnings is partially explained by the fact that Du Pont has allowed Federal income taxes at the rate of 69%—while 62% is the legal maximum. However, this allowance includes a figure for losses on renegotiation of contracts with the Government. Recalculation of Du Pont's net earnings on a 62% basis gives a profit of $94 million—a small increase but in line with that of the rest of the industry.

A reanalysis of the figures without including Du Pont presents a much more favorable picture for the industry. Over-all net earnings are up over 16% for the half and 12.5% for the second quarter. The corresponding figures when Du Pont is included are 6% and 14.2%.

One Time: One company, American Cyanamid, apparently pulled a rabbit out of the hat. Sales advanced 39% but net earnings rose an astonishing 66%. Profits will probably go back to $12-13 million per quarter from

now on, for most of this differential is accounted for by Cyanamid's sale of its interest (49%) in Southern Alkali Co. to the other stockholder, Pittsburgh Plate Glass Co. Before the sale was completed Southern declared a thumping $5.88 million dividend out of accumulated earnings with a resultant large saving to the company: Rather than paying 25% on capital gains, it paid merely the 5% tax on dividend income.

This differential is reflected in the tax figures. Cyanamid's allowance for Federal income taxes was only 54% of total profits. But Cyanamid, along with the rest of the industry allowed the 62% ceiling rate on the rest of its income.

Last Half: In the same way that second quarter comparisons were not as favorable as first quarter comparisons, second half earnings should not be as favorable as first half earnings. By July, 1950 many firms had adjusted their operations to full capacity and there was little if any more profit that could be squeezed out of the upper end of the break-even curve.

Also such companies as Heyden (penicillin and pentaerythritol), Newport Industries (naval stores), Commercial Solvents (penicillin and alcohol) will not have the huge profit increases experienced in the last half of 1950 when the huge jumps in demand for products in the near-doldrums plus higher prices turned in thumping profit rises.

But income should continue at a near-record pace. Unfortunately, Congress, in instructing the tax collector, will put a ceiling on this figure. Major new facilities for most companies will not be coming onstream until some time in 1952, when the next major increase in profits, if any, can be expected.

Emphasis on Chemicals

First two products to be manufactured by the newly-formed National Petro-Chemicals Corp. (60% National Distillers and 40% Panhandle Eastern Pipe Line Co.), will be ethanol and ethyl chloride.

The new plant, to be built at Tuscola, Ill., will in many ways parallel Mathieson Chemical's pioneering venture at Doe Run, Ky. Ethane, propane, butane and other highly volatile hydrocarbons will be carried along by natural gas in a pipeline from Texas—to Doe Run, Ky., for Mathieson, and to Tuscola, Ill., for National. After separation from the natural gas they are fractionated. Ethane is converted to ethylene, higher-boiling materials are sold as LPG. Mathieson will convert the ethylene to ethylene oxide, ethylene glycol and ethylene dichloride; National will make ethanol and ethyl chloride (*CW Newsletter, Sept. 1*).

J. E. BIERWIRTH: His goal, a third of the profits from chemicals.

Such plants as these are not cheap. To carry out its plans, National Distillers and Panhandle Eastern will ante up $11.2 million and $5.8 million respectively. But even this won't be enough. Another $17 million will be obtained by loans—with installments payable from 1954 to 1962. And the conservative bankers have asked the two companies to agree to invest an additional $3 million if it should be necessary for completion of the plant.

Not Enough: Engaging in such a robust project would be enough to satisfy the venturesome spirit of most. But not National. It is also digesting a major merger—with U.S. Industrial Chemicals, Inc., and spending $7.5 million to boost its sodium metal production capacity at Ashtabula, Ohio, from 42 million to 64 million pounds per year. The increased chlorine by-product at Ashtabula will, incidentally, provide the chlorine needed for Petro-Chemical's ethyl chloride manufacture.

On top of this, National will advance $2 million (with provision to advance $2 million more if needed), to purchase 20% of the capital stock of Intermountain Chemical Corp. In this venture it will be associated with Food Machinery & Chemical Corp. (which will invest $8 million) to manufacture soda ash (300,000 tons/year) from natural trona near Green River, Wyo. In addition to this $10 million advanced by the two companies, bank loans which aggregate another $10 million have been obtained to pay for the complete project.

New Money: Such major expenditures call for new financing. This has been carried out by sale of 500,000 shares of 4¼% cumulative preferred stock for a net return to National of nearly $49 million.

Apart from the aforementioned "chemical" expenditures ($20.7 million) National will invest $6 million in its traditional line of business—production of whiskeys and wines. The remainder of the capital raised by the stock issue will be used to retire existing short-term loans.

Emphasis on Chemicals: For the moment National's emphasis is on diversification in its manufacture of chemicals. These constituted 20% of total net sales of USI and National Distillers at mid-year.

With each additional step National moves toward the goal set up a year ago by its current president, J. E. Bierwirth: He hoped that eventually one-third of National's profits would come from chemicals (*CW, May 5*). That's well on its way to realization.

Strike Stalemate

The current labor trouble at Colgate-Palmolive-Peet started with the walkout of 31 retail soap salesmen in the New York metropolitan area. It soon spread to factory workers in the Jeffersonville (Ind.) and Jersey City plants, brought production at both places to a standstill. At stake: open shop vs. union shop for salesmen.

The disgruntled salesmen are members of Local 153, Office Employees International Union, A. F. of L. When they walked out, they threw up picket lines around the Jersey City plant. At the time it looked like a futile move since the workers there belong to an independent union. They honored the picket lines, however, and encouraged officials of the striking local flew representatives to picket the Jeffersonville plant. It surprised none when the workers there (Local 15, International Chemicals Workers Union, also an A. F. of L. affiliate) refused to cross the lines.

Management: Colgate's president, E. H. Little, has long been an advocate of strong labor unions, but he is adamant on the present issue. In a letter to employees this week, he pointed out that 41 salesmen belong to Local 153; ten of them have not gone out on strike. The strike of the remaining 31 has caused lost pay and work for 3,198 factory employees.

Little's View: "We don't believe

that salesmen should be required to join or maintain membership in a union as a condition for permanent employment. It would be detrimental to the sales organization and also to the company by placing it at a competitive disadvantage."

Labor Says: The union's stand is also simple and to the point: Colgate has a union-shop clause in every other union contract it has. Local 153 wants the same treatment.

Suggestion Box Stymie

Last week, the Wage Stabilization Board told a Chicago chemical manufacturer it was doubtful as to whether or not it could approve the company's proposed employe suggestion bonus plan. The possibility that those companies now considering suggestion systems could not put them into effect was a disappointment to those which had planned to start systems to yield savings in operating costs and raise employe morale.

Plans in effect before the Jan. 15, 1951 wage freeze date are not affected, but anything started since then may be considered a fringe benefit to workers, and therefore illegal. Nothing is clearly black and white, however, since there is a possibility that such a plan might be approved if it is set up so that the worker does not have to pay taxes on his awards.

But for companies which have had suggestion bonus plans in effect, they have been worth much more than money could not otherwise buy.

Most awards made by such companies as Merck, Cyanamid, Swift and Eastman Kodak run in the $10 to $50 range, but other seemingly simple suggestions have brought awards running into the thousands of dollars.

At Merck, the export shipping department foreman suggested the use of corrugated paper shipping containers instead of wooden boxes for some exports to foreign countries. Savings to the company on box costs and on freight charges were great enough so that the company felt it was well able to pay $2,390.

At Bound Brook, Cyanamid's Calco Division received a suggestion to keep steam valves shut off for 30 minutes during aniline processing. The resultant saving to the company in steam and effluent were enough to make possible an award of $3,380.

One of the First: Kodak began its employe suggestion program 53 years ago—one of the first such plans. Since its small beginning, it has grown to the point where, during the six months ending June 17, $117,154 was distributed for ideas suggested. A total of 6,881 suggestions were approved—about one third of the number suggested.

Awards made during this period included $88,369 for original ideas, an additional $28,785 on past suggestions previously approved for cash awards and later reassessed as even more valuable to the company. Top check during the period and during the whole program was for $6,700 split between two workers.

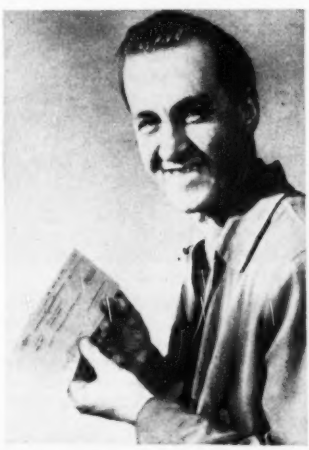
Problems of the Plans: Suggestion plans are no "bed of roses" when it comes to administration. Definite policy has to be set up on certain debatable issues.

In the first place, who should be eligible? It seems pretty general that plant workers are included, and sometimes office personnel. Foremen are sometimes eligible, sometimes not. In one company, they get payments if their ideas are used in other departments. Another company says it will pay if it can be used in a similar department in another plant.

Higher management sometimes is completely ineligible. Other companies allow, and pay for, suggestions only if it is a suggestion outside of job expectancy.

Another problem is the determination of how much the suggestion is worth. Should it be a strict percentage of the estimated cost saving? Should it be on the basis of an initial payment and then later yearly payments? What if the employe leaves the company?

The Plus Values: Suggestion plans are definitely advantageous from the morale standpoint, since they make a worker feel more a part of the company. As such, it definitely contributes to easing such management worries as rapid employe turnover.



CALCO'S WINNER: The $3,380 smile.

Generally, companies feel that if one out of five suggestions are usable, it is a good percentage. Abbott Laboratories runs about double this figure. In general, the usable fraction varies directly with employe morale. When morale is high, not many suggestions read *"Drop Dead!"*

Money Isn't All: Some firms do not believe in a cash award. One firm which had a money bonus plan all through the war dropped it in 1945. The company's reason: neither lack of money nor failure of the system. Rather, it felt that the best ideas could be developed only in group discussion. If money awards were offered, each man would want to keep his idea so he could put it in the box first. The company posts merit award notices for employes submitting suggestions. Thus, it hopes, there is still an incentive for suggesting, but not an incentive for being secretive about the idea.

In many companies, there is an "unofficial" suggestion award; the reward to foremen or supervisors for making suggestions is a more rapid advancement in position with the company.

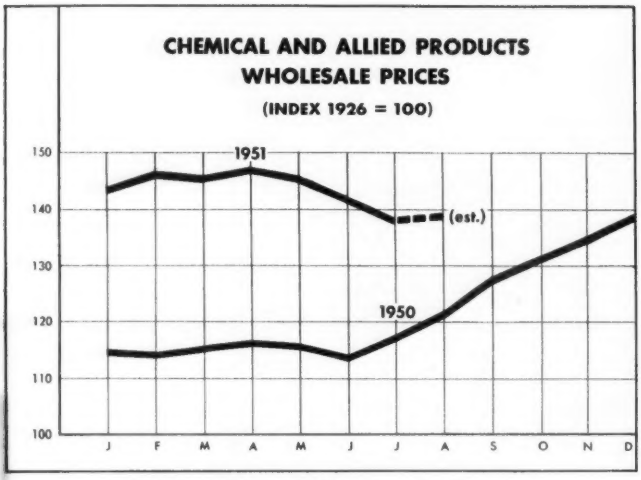
But, more and more—at least until the WSB threw the contents of its cold water pail, companies have been deciding to use bonus plans to buy better employe morale and plant operating economies at an extremely low money cost.

Cracker Catalysts

Three plants for the manufacture of synthetic fluid catalysts for petroleum cracking will soon be in operation on the Gulf Coast. The latest: a $7 million unit now being erected by Davison Chemical Corp. about six miles south of Lake Charles, La.

Bay Chemical Co. has a plant under way at Weeks, La., while American Cyanamid has operated a plant at Fort Worth, Texas, since the early days of fluid "cat" cracking.

The new Davison plant, its third, will provide sufficient catalyst to process 600,000 barrels of petroleum stocks per day. When this figure is added to the present capacity for catalytic petroleum cracking (nearly 800,000 barrels per day), it is obvious that cracker catalyst producers have their eye on the day when all petroleum cracked in the U.S. (slightly over 1.5 million barrels per day) will employ their products.



CHEMICAL PRICE CURVE: Reason to expect a rise.

Prices Get Backbone

Steady decline in chemical prices since spring halted, despite further drop in fats and oils index.

Signs of ascending trend seen, based on stepped-up buying demand for fall upswing and more defense orders.

Prices in next few months slated to rise, then level out. Reasons: higher OPS ceilings, higher freight rates.

For the first time since April, the chemical market is now showing stronger demand and a tendency to higher prices. More purchasing agents are beginning to subscribe to the idea that an upturn in chemical sales is in the offing. The question that confronts them, then, is the hardy perennial: buy now or wait a while?

Their expectation of higher prices hinges less on any single major factor than on a number of smaller ones. Among them: higher production costs and heavier demand.

More Needs: Two chief causes are slated to fortify demand for chemicals in the near future. One is the usual increase in fall business, following the summer letdown. The other factor is the extra impetus that will be supplied by the defense program, at last playing an active part in the market demand. Within two years, the defense needs will absorb some 20% of total output. And on top of these domestic requirements is the stronger foreign demand for U.S. chemicals.

Mental Hazard: Despite these signs of stepped-up buying pressure, those who control the company purse-strings want above all to avoid a repetition of the scare buying that typified the chemical market in weeks after Korea. The frantic bidding and stockpiling of that time is still painfully fresh in many minds. By the time that the inevitable reaction set in this spring, inventories bulged and warehouses were jammed. The normal summer decline did little to dispose of this surplus inventory.

More Clarity: Having had a chance to take stock, purchasing agents can seen the looming market development more clearly than at any time since Korea. Accordingly, they are less likely to be subject to the pressure of bandwagon buying. The clarified market picture will permit a closer look at the price behavior of the different categories of chemical products, each of which has its own way of reacting to the general trend.

Singled Out: On the basis of latest information compiled by the Department of Labor Statistics, the price index has shown increasing strength for the separate categories of chemicals, and also chemicals and allied products. The latter group points to an index rise of around 0.5 points in August, the first gain since the steady decline from the April peak. (From 147.9 in April, the index fell to 142.9 in June and 139.4 in July.)

The chemicals group index has followed a similar pattern, with April and May around 145, June at 144, July 143.1, and August estimated at 144, a rise of 0.9 point.

Fertilizer materials have reacted differently from most. The price actually declined in the latter half of 1950, and has just regained the same price level prevailing in the first part of 1950. Reason for this anomaly: Fertilizer sales have been made chiefly on contract, not on the open market.

Drugs and pharmaceuticals are still holding steady at around the index level of 184-185.

Only the oils and fats category shows continued weakness in today's trading. The index has been dropping steadily from the February peak of 217.3 to the current low of 139.3 in July, a plunge of some 40% in less than half a year. However, this drop is not likely to continue below the 125 niche that prevailed in the glutted market of 1949. Fats and oils epitomize the effect of Korea—a turbulent buildup and a precipitous drop.

Other Signs: Other factors serve to confirm what these statistics indicate. The Capehart amendment to the price control bill is expected to make price increases more numerous and easier to get. Another influence is the freight rate boost granted by the Interstate Commerce Commission.

In Sight: What these trends boil down to is essentially this: higher buying pressure and higher prices. It isn't likely that the aftermath of Korea will be repeated, nor is the resale market apt to flourish with vigor. But the evidence is on hand that prices of chemicals will be heading closer to the ceiling—and before long.

Business-Like Army

In an effort to operate on a more realistic financial basis, the Army Chemical Corps is testing a new system of financial controls closely paralleling those used in private industry. Known as the Army Industrial Fund, the system is undergoing trial at the Chemical Corps' Rocky Mountain Arsenal.

At present engaged in the production of napalm incendiary bombs, the arsenal is almost entirely an industrial operation, "selling" its products to the Navy, Marine Corps, and Air Force, as well as to the Army. Products are "sold" on a unit cost basis, and the new plan is designed to develop both a cost consciousness in the Army, and

a clean-cut records system that will more readily reflect the true cost of any service or process. Analysis can thus be made to reduce expenses or eliminate inefficiencies.

Hidden Costs: The appropriated fund system in use at present does not include in the unit price all of the elements making up the cost of an end-item, as is the case in private industry. Under the new plan the end-item price will include such expenses as maintenance, medical services, security, purchasing and storage of supplies, and other overhead items as well as labor and materials costs.

The Fund, created to supply capital outlay until the plants become self-supporting, is also being tested at Ordnance's Picatinny Arsenal and at the Philadelphia Quartermaster Depot. No profits will accrue to any plant, and all funds returned will be used for further operations on a revolving system.

With the new procedure the Army hopes to overcome much waste, put its industrial-type installations on a sound financial basis.

Foundation Undercut

The long, and often bitter, controversy over the place of basic research and scientific training during times of immediate danger, was suddenly reopened on the Senate floor last week, when Senator Fulbright (D., Ark.) strongly condemned the killing of the National Science Foundation. The Foundation was barely breathing after Congress cut its appropriation from a requested $14 million to a meagre $300,000.

Occasion for the Senator's entry into the fight was the debate on the new Sugar Act. What Fulbright couldn't stomach was the millions being poured into the sugar industry when a vital activity, in his view, was being dropped.

In refusing to recognize the need for the Foundation, Congress took the view that "[its] early aid in the present emergency is not very tangible." Senator Fulbright is not alone in taking exception to this position.

That industry is concerned seems apparent from a statement made earlier this year by Randolph T. Major, Merck vice-president. In a speech calling for continued scientific work in wartime *(CIW, May 26)* Major said, "Let us hope that our country's policies will always permit the suitable training of such people [scientists], and the utilization of such men along the lines of their training even during war."

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION OF FACILITY	PRODUCT	AMOUNT ELIGIBLE	PERCENT
Brown Co.	Berlin, N. H.	Wood pulp	$1,318,075	65
Penobscot Chem. Fibre Co.	Old Town, Maine	Wood pulp	817,717	65
Fitchburg Paper Co.	Fitchburg, Mass.	Wood pulp	208,949	65
National Refractories Co.	Van Dyke, Pa.	Refractories (brick)	363,695	85
A. O. Smith Corp.	Milwaukee, Wis.	Heat exchangers (parts)	182,593	75
Nykroy, Inc.	Arlington Heights, Ill.	Glass bonded mica	4,600	75
Freeport Sulphur Co.	Terrebonne Parrish, La.	Crude sulphur	3,868,600	85
West Virginia Pulp & Paper Co.	Luke, Md. (Allegany County)	Sulphate wood pulp	3,500,000	65
Donner-Hanna Coke Corp.	Buffalo, N. Y.	Benzene	242,045	95

Shortsighted: But it is just such a policy that Congress is refusing to follow. Alan T. Waterman, Director of the Foundation, pointed out that $13-215,000 of the requested funds were earmarked for two major programs: support of basic research and the training of scientific manpower.

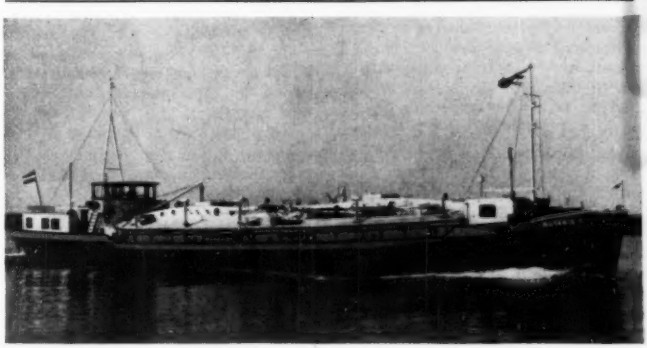
In Waterman's opinion Congress has badly misunderstood the desperately critical shortage of trained scientists and engineers. According to Waterman's figures, the U.S. will be short some 13,000 engineers by 1954, and the same is generally true of all scientists. While military research and development efforts are increasing rapidly, the supply of scientists is decreasing.

For the fiscal year of 1952 the Foundation planned to grant 2,100 graduate fellowships in the sciences and engineering, helping to insure a supply of trained manpower to do the vital research and engineering work. This has now gone by the boards.

Loser's Lesson: In rejecting Congress' conception of basic research as of little immediate value, Waterman pointed out that the Germans stopped their research in 1940, and lost so much time that they missed the atom bomb, microwave radar, and the proximity fuse. That is the price of no research, he hinted.

No one questions the need to maintain scientific and technical supremacy, and in Waterman's opinion this can only be done by retaining depth of basic research. The time-lag between basic principles and practical application grows less every day, and technical progress will thus be hampered more than ever by lack of basic knowledge.

Outlook Dim: With the defense budget increased fourfold, and Congress in an economy mood, it is fairly certain that Senator Fulbright's words will fall on deaf ears. The Foundation believes that it can clarify its position, and convince Congress of its necessity to the country, but at present the outlook is rather dim.



Coastwise Shipping, European Style

MAIDEN VOYAGE: Sisterships Butania I and Butania II are the first European vessels built for transporting liquefied petroleum gas. Having recently completed their maiden voyage, the ships will travel between Pernis (near Rotterdam), Holland, and Ghent and Brussels in Belgium. Famous waterways in the two countries make the water route more economical than either rail or truck. Each ship has a capacity of 125 metric tons, is 150 ft. long, 20 ft. wide, 9 ft. deep. Maximum working pressure of the tanks is almost 100 lbs. per sq. in.

WHITNEY AND BOYD: A palliative but not a cure.

New Life for Frasch

An additional half-million tons a year of Frasch-mined brimstone will spew out of the ground by 1953. Freeport Sulphur Co. will take that amount out of an unexploited dome at Garden Island Bay, La.—at the extreme tip of the Mississippi River delta.

Worry about the sulfur shortage has percolated down from technical men and industrialists to the general public, and so when Freeport's board chairman John Hay ("Jock") Whitney told the world about the new discovery, stories splashed in daily newspapers from coast to coast.

Some of these stories were garbled; others were overenthusiastic, hailing the promised new production as spelling an end to the deficit.

Bright Side: The new, 500,000 tons-a-year bonanza added to the 530,000 tons a year anticipated from three other domes* due to produce next year looks off-hand like a complete solution to the shortage: Bureau of Mines Chief Jim Boyd—whose frowns over the sulfur situation turned upside-down into smiles at Freeport's news—estimates the world-wide sulfur deficit at a million long tons annually.

Freeport has enough faith in the productivity of the new dome to sink $10 to $15 million into its development—and for only half the profit. The other half goes to Texas Co., whose explorers discovered the dome while looking for oil. Salt was first discovered, but the sulfur potentialities of the deposit weren't realized until last April, when Freeport started test-drillings.

Dark Side: It's not at all sure that the total new production by 1953 will prove ample.

Sulfur mining officials agree that the mines are currently producing at a faster rate than is consistent with sound economic practice. They'd like to see their customers less clamorous—so that they could slow output to a reasonable, and actually more profitable, rate.

Their customers notwithstanding, depletion of easy-to-get sulfur in existing mines will undoubtedly force a lower production rate—and thus widen the gap that must be filled by new production.

Also, the growing population and even faster-growing technology will push 1953 sulfur demand beyond the foreseen output figure.

All these arguments are summed up by the U. S. Department of Agriculture (which is concerned about sulfuric acid for fertilizer production) in a statement that the new Louisiana find is only a "drop in the bucket" in view of the nation's increasing need.

Significantly, Freeport has just purchased 7,000 acres of pyrrhotite (sulfur-bearing ore) deposits in Virginia, and is still pursuing its search for additional pyrites and similar "uneconomic" sulfur sources. Other firms, too, are actively seeking non-Frasch sulfur. Their actions support, better than speeches, the belief that things will get worse before they get better.

* Jefferson Lake Sulphur's Stark Dome, Texas Gulf Sulphur's Spindletop Dome, Freeport's Bay Ste. Elaine Dome.

FOREIGN. . . . . .

Great Britain: A 10,000-ton-a-year sulfur recovery plant, converting hydrogen sulfide to sulfur, will be part of Shell's new Stanlow (Cheshire) refinery. Slated to go on stream at the end of the year, when the refinery commences operation, the plant is intended to supply the sulfuric acid needed in refinery operations.

But with the world sulfur shortage pinching Britain, Shell will sell its sulfur on the British domestic market for the time being, and fill its acid requirements from outside sources.

A 5,000-ton-per-year acid plant is also being built, will begin operation late in 1952.

•

Australia: Latest development in Australia's drive for pharmaceutical self-sufficiency is a modern aureomycin factory. Cost of factory and equipment will be near $6 million.

With chloromycetin already in production, the Australian government is showing an increasing interest in export possibilities. While distributing drugs free of charge at home, the Australians are keeping an eye on the potential demand for medicines in neighboring backward countries.

•

New Zealand: The New Zealand government is preparing to develop a wood pulp and newsprint plant, expected to cost nearly $40 million. Experienced contractors throughout the world will soon be invited to bid on the project.

Estimated production of the plant is provisionally quoted at 50,000 tons of newsprint and 70 million board feet of timber.

EXPANSION . . . .

More Kraft Pulp

Everett, Wash., is the location of a new $20 million pulp mill that is now being erected by Weyerhaeuser Timber Co. The new plant will produce 250 tons per day of bleached kraft from a feed of douglas fir sawmill waste which cannot be utilized in Weyerhaeuser's present sulfite pulp plant. Another product will be purified cellulose for explosives manufacture.

A portion of the waste liquors from the pulping operation will be recovered by evaporation. The remaining waste liquors will be carried out into the deep waters of Port Gardner Bay to reduce pollution.

At Port St. Joe, Fla., the Port St.

Jefferson Ethylene Glycol

A versatile industrial chemical

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Cellophane	Synthetic Fibers
Alkyd Resins	Hydraulic Fluids

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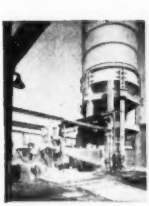
For information on price and availability write today to our Sales Division, Department B.

★ *National defense requirements have created emergency demands for Jefferson chemicals. Although our facilities are being expanded as rapidly as possible to cope with these requirements, many of our chemicals are currently in short supply. We nevertheless welcome your inquiries and will make every effort to serve you.*



Quicklime silo and lime slakers in ethylene oxide and glycol unit at Jefferson's Neches plant.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.

ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

Briefs

From recent literature

Heat for the machineless waving of hair is usually generated by bringing aqueous ethylene glycol into contact with potassium permanganate. It has been found that a longer-lasting, more even heat is developed if a polyoxyethylene ether of glucose or a similar sugar is added to the glycol solution. These mixtures are, of course, adaptable to other uses requiring chemical heating.

Stable suspensions of polymeric chlorotrifluoroethylene suitable for use in coating wires are formed by grinding the polymer in a micropulvizer and then milling the finely divided polymer in a ball mill with a solution of a monohydric alcohol in ethylene glycol. Uniform, flexible coatings having good electrical resistance are formed on wire by passing the wire through the suspension and then baking.

Water-soluble modifications of prolamins (particularly zein) are prepared by heating the prolamin with ethylene glycol in the presence of a strong base. The modified prolamin is useful in the preparation of inks, water dilutable paints, and molding compositions.

Polymeric esters of cyclohexadiene dicarboxylic acids and ethylene glycol are oils exhibiting the air oxidation–hardening properties of drying oils (e.g. linseed oil). The polymers are thermosetting and form hard coatings when heated to about 150°C. The hardening properties of the polymers are explained as being due to the variety of cross-linkages which may be formed under various conditions.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Ethylene Glycol in your products or processes.

DRYMET*

ANHYDROUS SODIUM METASILICATE

A granular, free-flowing alkali with the following properties:

Formula . . . . . Na_2SiO_3
Molecular weight . 122.06
Melting point . . . 1088°C
Na_2O 51%
pH in a 1% solution 12.75

Quickly and completely soluble in water up to a concentration of 35%

DRYMET is the most highly concentrated form of metasilicate available because it contains no water of crystallization. Unique among alkalies—it combines strength with buffering action which prevents abrupt changes in pH. If you use alkali—investigate the advantages of DRYMET.

*Reg. U. S. Pat. Off.

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HARCHEM

HARDESTY CHEMICAL CO., INC.
41 EAST 42nd ST., NEW YORK 17, N. Y.

Joe Paper Co. has awarded a contract to Tidewater Construction Company of Norfolk, Va., as general contractor for its $25 million expansion program. The expansion, to start immediately and be concluded by September, 1952, will increase daily output of kraft paper from 400 to 1,200 tons.

KEY CHANGES . .

Walter M. Ralph: To assistant to the president, National Aniline Division, Allied Chemical & Dye Corp.

Wesley Minnis: To director of research and development, National Aniline Division, Allied Chemical & Dye Corp.

Avron L. Davies: To assistant to the president, Chemstrand Corp.

Norman C. Stiles: To purchasing agent, Chemstrand Corp.

Mark E. Putnam: To executive vice-president, The Dow Chemical Co.

W. R. Dedert: To general manager of production, Victor Chemical Works.

H. B. Terry: To general superintendent of phosphate plants, Victor Chemical Works.

S. T. Keel: To domestic sales manager of the Phosphate Division, International Minerals & Chemical Corp.

Charles H. Carter, Jr.: To assistant general manager of the industrial chemicals department, Atlas Powder Co.

O. E. McCullough, Jr.: To assistant manager of the Protective Coatings Division, Pittsburgh Coke & Chemical Co.

E. C. Vierling, Jr.: To assistant manager of the Protective Coatings Division, Pittsburgh Coke & Chemical Co.

Paul R. Shildneck: From research director to assistant technical director, A. E. Staley Manufacturing Co.

James P. Casey: To director of the technical service branch of the research organization, A. E. Staley Manufacturing Co.

Lester B. Gordon: From director of sales to vice president, Solvay Sales Division, Allied Chemical & Dye Corp.

Denman Peniston: From assistant director of sales to director of sales, Solvay Sales Division.

John H. Elleman: From sales manager, Calcium Chloride Department, to assistant director of sales, Solvay Sales Division.

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When you place your order with Barrett you're assured prompt, dependable service and top quality products, backed by 97 years of successful manufacturing experience.

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GET IT FROM...

Phenols	Phthalic Anhydride	Lutidines
Cresols	Dibutyl Phthalate	Tar Acid Oils
Cresylic Acids	ELASTEX* DCHP Plasticizer	Neutral Coal-tar Oils
Chlorinated Tar Acids	"ELASTEX" 10-P Plasticizer	Coal-tar Creosote
Xylenols	"ELASTEX" 50-B* Plasticizer	CUMAR* Paracoumarone-Indene Resin
Pickling Inhibitors	"ELASTEX" 28-P Plasticizer	Carbonex* Rubber Compounding Hydrocarbon
Benzol	Phenolic Resins	Bardol* Rubber Compounding Oil
Toluol	Niacin (Nicotinic Acid)	Flotation Agents
Xylol	Pyridines	
Naphthalene	Picolines	
Hi-Flash Solvent	Quinoline	

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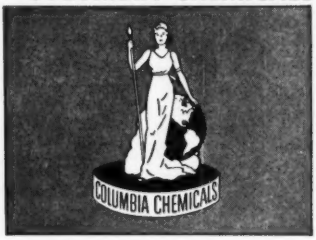
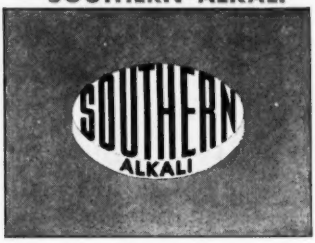


SOUTHERN ALKALI



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Whether you've been accustomed to doing business in the past with Columbia Chemical Division of Pittsburgh Plate Glass Company, or with Southern Alkali Corporation, you'll continue to find the same competent personnel—in every department—welcoming the opportunity to serve you as Columbia-Southern . . .

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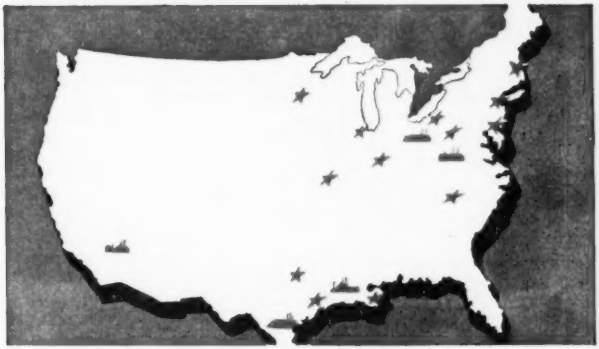

Production at all plants is being maintained at the highest possible levels in order to help meet the current requirements of industry.

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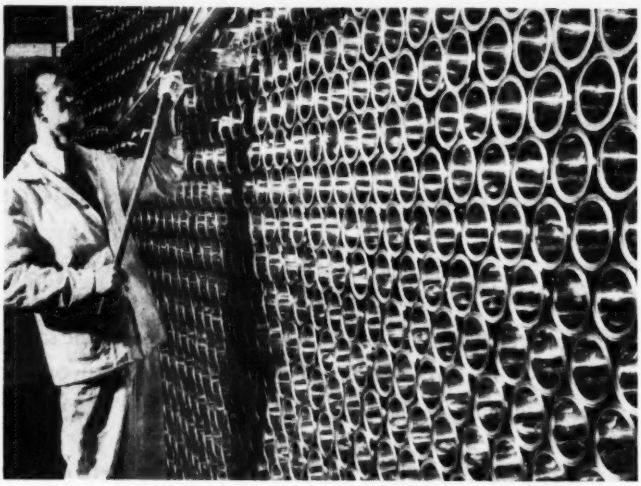


TIN CANS: With a new allocation, a revised order.

More Steel, Better Deal

Chemical companies, after an uphill struggle (a) to understand M-25, NPA's basic order on tin cans and (b) to learn how to live with it, can soon forget about (a) and start all over on (b). A new amendment, which goes into effect October 1, is a complete overhaul of the nebulous original.

For some time NPA has been discussing a revision of M-25; it gave early indication that a general "tightening" was in the offing. Last week, however, the agency decided to allocate 4 million long tons of steel for can makers, holding an additional 400,000 tons in reserve.

That will amount to more steel than the manufacturers have used in any previous 12-month period, should enable them to produce at a rate close to capacity. Even so, they will not be able to meet all demands and NPA will continue to allocate cans under the revised M-25.

One of the changes in the order is that—beginning on the first of October—can production and use will be figured on a yearly basis instead of a quartely one. According to NPA that should help ease the lot for packagers of seasonal goods (anti-freeze, etc.). However, it's hard to see where the yearly basis will entail much of a change for can users. Both the old and new versions of M-25 state that if a company does not use its allowable quota in the first three quarters, it can add the unused portion to its quota any time before the end of the year.

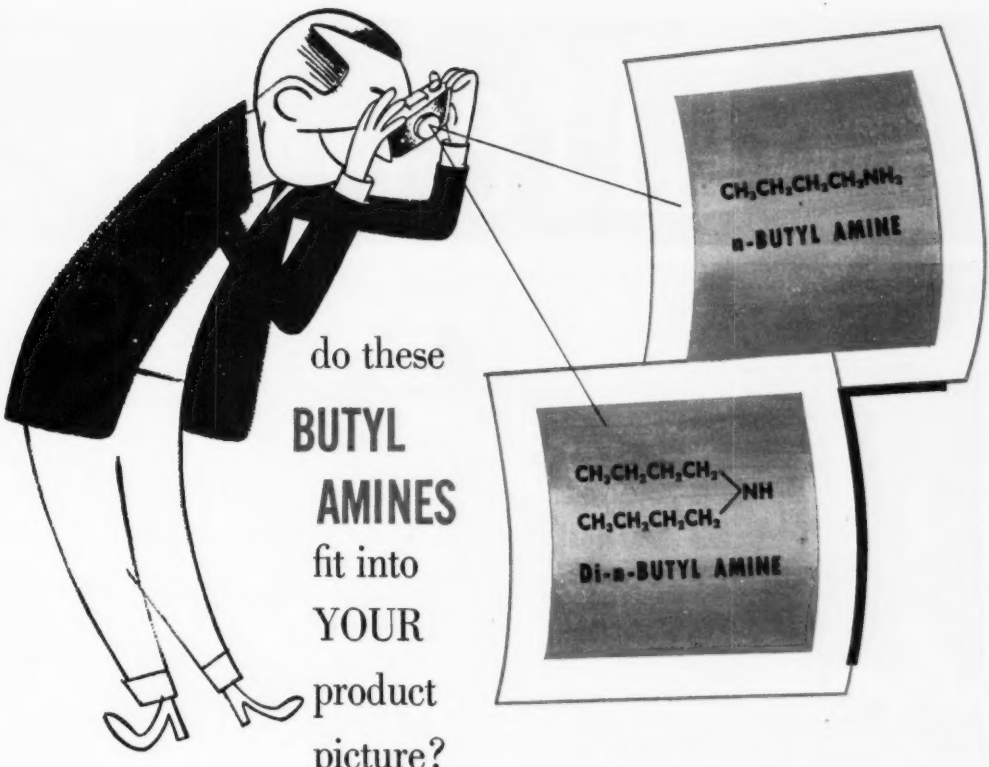
The big change in the order is the elimination of preference schedules. Under the old system, all products were classified as either "A" or "B"; manufacturers had to give first consideration for filling can orders to "A" products.

Now all products are divided into three groups but each will get the same consideration from manufacturers (exception: DO's get first call in all cases). With few exceptions, chemicals are in the second group, which allows 90% of the cans used during the base period (1949 or 1950).

Exemptions: As before, products carrying a DO rating will be free from any restriction on use. And cans made entirely of black plate rejects, tin plate waste or terne plate waste can be used without limit. Furthermore, as interpreted by NPA, the number of cans means the total area or tonnage of tin plate. So if a canner can get by with a lighter weight plate, he can use more cans.

One of the persistent, if minor, headaches for chemical companies has been in obtaining cans for samples. The revised order, as well as the original, are definite on that score. Laboratory or control samples are exempted from the order. If the sample is to be used for advertising or promotion or is to be used for products that will be later repacked and sold, the exemption does not apply.

The early guess among industry: Any company which managed to get by under the old order is a cinch to survive the new.



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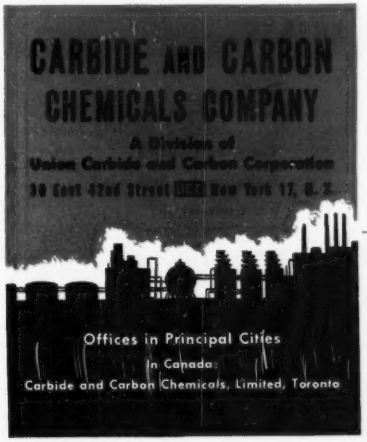
- these amines have utility in the preparation of:

specialty soaps	corrosion inhibitors
dyestuffs	petroleum demulsifiers
rubber chemicals	insecticides
flotation agents	pharmaceuticals

Butyl Amine and Dibutyl Amine may be just the answer to your product or process problem. Check them now by asking for samples and information on your company letterhead. Be sure to ask for technical bulletin F-6871A, "Butyl Amines."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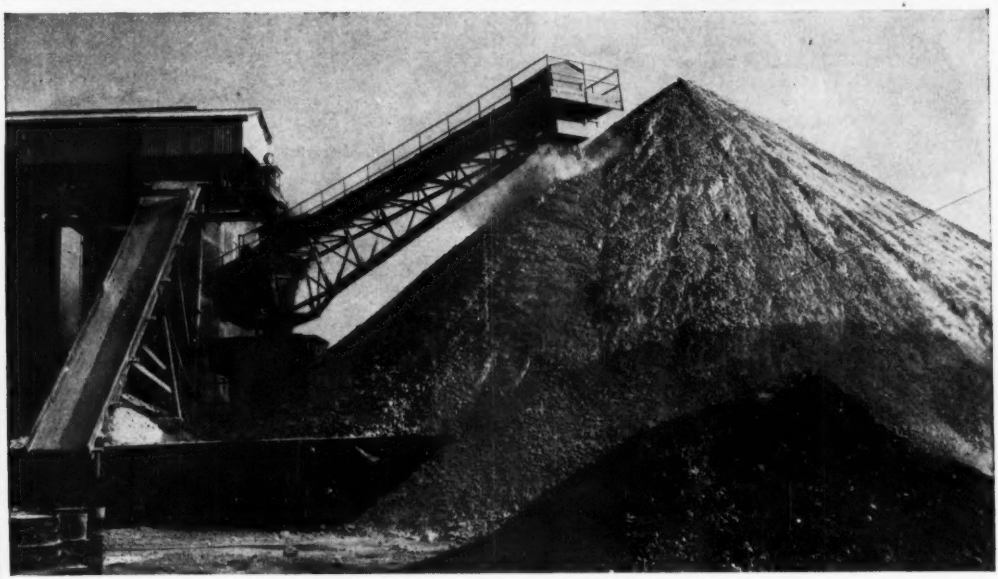
Life ...on the



600 TONS PER HOUR of sulfur or bauxite can be handled by this new ship unloader installed at Cyanamid's Warners Plant in Linden, New Jersey. Consisting of an unloading tower and new type boom stacker with auxiliary conveying and distributing equipment, this installation lowers previous handling time by 50%—another example of Cyanamid's continuous effort to raise operating efficiency, lower production costs.

New Product News

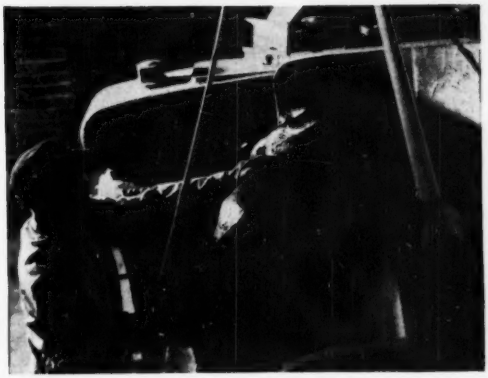
THREE NEW SURFACE ACTIVE AGENTS

	Structure of R Group		Physical Form
Surface Active Agent BO	$C_{12}H_{25}$	2-Butyloctyl	White, waxy pellets
Surface Active Agent TR	$C_{13}H_{27}$	Mixture of isomers	White, waxy pellets
Surface Active Agent BPE	$C_{12}H_{17}O$	2-p-tert.-butylphenoxyethyl	White powder

Properties: Entire group of compounds exhibits good emulsifying power in the preparation of stable oil-in-water systems . . . fair detergency in aqueous systems. Agents BO and TR are superior detergents in non-polar solvents and are outstanding for dispersing solids in hydrocarbon systems. BPE is excellent for dispersing in aqueous systems.

Possible uses: Textiles, paper, cosmetics.

Chemical Newsfront



WHITE STAYS WHITE when Cyanamid's Retarder PD Anti-Scorch Agent is used to help get better results in rubber formulations. This compound helps to prevent scorching at processing temperatures and has little retarding effect at curing temperatures. It will not discolor white or light-colored stocks, nor affect the physical properties or aging qualities of vulcanized stocks.

SUTURES THAT "TELL TIME" are produced by a Cyanamid subsidiary, Davis & Geck, Incorporated. One of the world's foremost manufacturers of surgical sutures—D&G has developed a method of tanning catgut which enables it to hold wounds together for definite, *predictable* periods of time before absorption into the tissues. This remarkable aid to surgery is another example of the results of the expanding research and development program now being carried out by Cyanamid and its associated companies.

SUNLIGHT AND LAUNDERING can be very destructive to colored fabrics. Vat Dyes, made by Cyanamid's Calco Chemical Division, have enabled textile manufacturers to produce cotton, wool and viscose materials of remarkable color fastness. Calco's Vat Yellow, for example, produces a clear, bright yellow that excels all other vat yellows in fastness to light, chlorine, towel bleach and washing —making it an excellent dye for dress goods, towels, draperies and similar uses. Other Calco Vat Dyes are available to meet a wide variety of applications.

American Cyanamid Company C-I. 9-51
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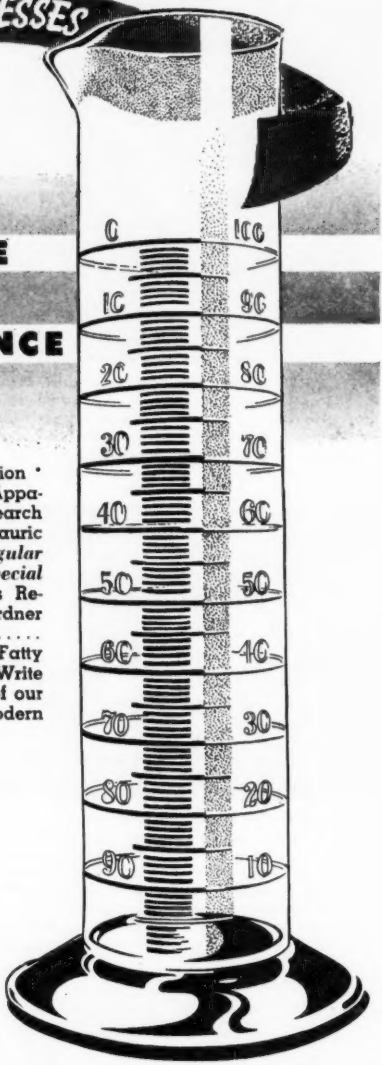

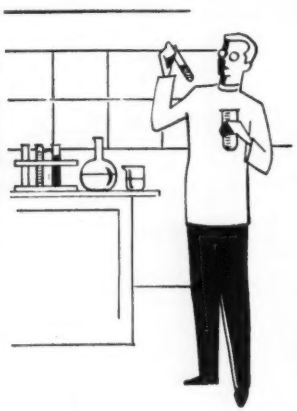

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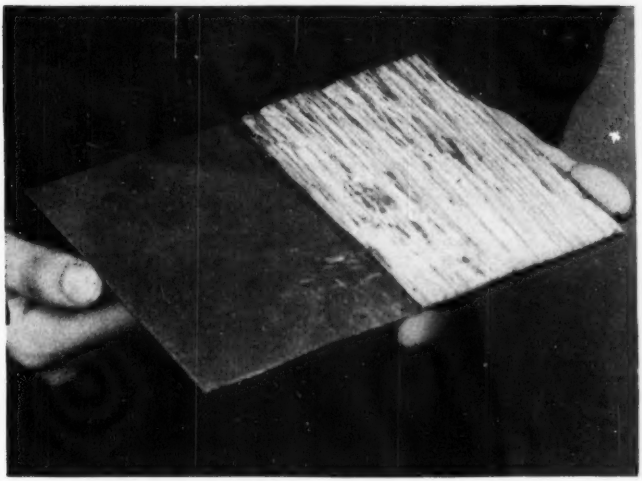

WOOD-ALUMINUM BOND: Ethoxylines make it easy.

High-Interest Bond

Ethoxyline resins, newest of the commercial thermosets, are moving into adhesive applications.

Chemical, heat, and electrical resistance combined with high adhesion to metals and ceramics boost the ethoxylines for many difficult industrial bonding jobs.

Much current research is centered about the development of a formulation for structural use in aircraft.

Highly successful as surface coatings, the ethoxyline class of resins is now intent on making a name as adhesives.

The same properties of chemical inertness, flexibility, hardness, and heat resistance which serve well in protective coatings should also stand them in good stead in their new endeavor. But the ethoxylines' strongest point is their ability to stick—and stick fast—to a number of important industrial materials. Metals, plastics, rubber, wood, and ceramics are typical examples; they may be bonded to themselves or each other.

Aircraft manufacture looks like a promising market for the new adhesives; bonding aluminum to itself will probably be the most important use in this field. But everything depends upon the Air Force. Several manufacturers have submitted their products for consideration under Air Force specification 14164, but as yet none have been approved. Although the ethoxylines have shown that they can do a real job with aluminum, the Air Force is understandably cautious in giving its O.K. Reason: an ingrained fear of an organic bond in the metal structure of an airplane.

Even if ethoxylines are not approved—although there is no evidence to suggest this view—they still have their work cut out for them in a great many structural applications requiring a strong bond between two aluminum surfaces. Fabrications of furniture, household ware, drainpipes, ladders, etc., come under this heading.

Wide Choice: Ethoxyline is a generic term encompassing a large and varied group of polymers. In a general way they may be described as polyaryl ethylene oxide condensation products of epichlorohydrin and bisphenols. Properties of the polymers vary considerably as does their final chemical structure. Some are heat-catalyzed, others are cured with acid anhydrides or amines. But there's no question but that the ether linkage imparts the high chemical resistance, and the polarity of the molecule makes for adhesion.

Versatility is the keynote with ethoxylines. Shell Chemical Corp.'s Epon resins, members of the family, have distinguished themselves as surface coatings. But recently Shell has come out with Epon Adhesive VI for bonding metal, wood, plastics, glass and rubber to themselves or each other.

Ciba, Inc.'s Araldite ethoxyline resins are produced in three basic forms for bonding, casting and surface coating. Adhesive uses: bonding metals, glass, plastics, ceramics and heat-resistant materials like graphite and asbestos; manufacture of adhesive-impregnated cloth and paper; bonding cloth to plastics. Several of the Araldites combine good adhesion with high dielectric strength, are well suited for jobs like wire coating and potting of transformers and ceramic capacitors.

Polymer Industries, Inc., has just brought out a line of ethoxyline adhesives called Pylenes. True to form, they are being primed for uses such as bonding aluminum to itself, adhering copper to masonite, bonding neoprene to plastics, assembly gluing of items like cigarette lighters, and can lining and seaming.

Armstrong Cork Co. and Cycle Weld Division of Chrysler Corp. are also prominent in ethoxyline adhesives.

Ethoxyline adhesives are available in several different forms to facilitate process use. Shell's Epon Adhesive VI consists of a thick, pasty, resinous portion and a clear liquid curing agent. Polymer Industries' Pylenes are formulated as powders, pre-polymer liquids, and solvent solutions; curing agents are incorporated or supplied separately as desired. Ciba makes the Araldites as solids, or liquids, their use depending upon the preferred method of application.

Hot Or Cold: In most instances heat is required to form the bond, although some ethoxylines will set at room temperature. High pressures aren't necessary; good contact is usually sufficient to produce a strong bond.

For best results the surfaces to be bonded must be clean and free from grease and oil. Ordinary solvent degreasing is satisfactory for metals, although caustic etching of aluminum parts (followed by thorough rinsing and drying) gives better joint properties.

In their commercial infancy, the new adhesives have a bright industrial future. Ethoxylines, newest of the thermosetting resins, offer a fertile field for further research and development. If variety and versatility are any criteria, they could well go as far as their esteemed grandparents—the phenolics.

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Primaquine Proof

This week a contingent of several hundred returning veterans of the Korean War will receive doses of the new antimalarial primaquine. Aim: To determine whether the drug is the long-awaited cure for malaria.

Alfred S. Alving, professor of medicine at the University of Chicago and one of the team *(CW, Aug. 11)* which developed primaquine, will accompany the experimental group, supervise administration of the drug, study its reaction, and manage the follow-up.

If the results shape up to researchers expectations, malaria will have suffered a telling blow. For primaquine, unlike its predecessors (quinine, atabrine, chloroquine), may be more than a suppressive.

The most common type of malaria occurs in two phases: a blood phase marked by acute symptoms, and a tissue phase which may produce no symptoms at all. Until now, antimalarials have only been effective against the blood phase. True, symptoms have been relieved; but the disease lingers and recurs the next time the malaria parasite leaves the tissues and reenters the blood stream.

Primaquine promises to take up where the others leave off. Preliminary tests with the drug at Statesville Penitentiary (Joliet, Ill.) revealed a high percentage of cures—and with no subsequent relapses. Results of more recent work are favorable, but still inconclusive. Hence, the Korean trials.

If primaquine makes the grade, it won't displace chloroquine, now standard with the Army. Rather, it will take its place on the shelf next to the older drug. In this way, the medics will have a double-pronged weapon: chloroquine for the blood phase, primaquine for the tissue phase. By routine administration of both drugs to all personnel in a malarial area, it may be possible to cure the disease before the individual knows he has it.

None of the returning soldiers has a previous history of malaria. But the odds are that several of such a group would turn up with the disease after they were back in the States. If none does, chalk up a victory for primaquine.

Primaquine, a quinoline derivative synthesized by Robert C. Elderfield of Columbia University, is closely related to an older German-developed antimalarial which proved too toxic. The new drug is not yet produced commercially.

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Rubber Research: Synthetic rubbers will occupy a prime position in research at Cornell University's new William C. Geer Laboratory of Rubber and Plastics. Work at the new facility will be aimed at the development of new rubber and plastics information for industry and the Government.

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Sugar Paper: The U.S. Forest Products Laboratory is now trying to determine the practicability of making newsprint from sugar cane bagasse. The program is looking into pulping as well as paper making. De La Roza Corp. of New York City has a hand in the research.

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Decay Stopper: Researchers at Rutgers University report cyanide ion and other copper-sequestering agents make effective stabilizers for terramycin.

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Medical Aid: The National Microbiological Institute has awarded 102 grants (totalling $1,088,952) to private medical researchers. New tuberculosis drugs will come in for evaluation.

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More on Antimalarials: Further news comes from Wellcome Research Laboratories. Earlier this year, researchers Hitchings, Russell and Falco reported the antimalarial activity of 2,4-diaminopyrimidines. Further studies reveal a possible correlation between structure and potency.

In tests conducted with six 2,4-diamino-5-alkoxypyrimidines and forty-nine 2,4-diamino-5-aryloxypyrimidines it was shown that unsubstituted amino groups are essential to high activity. This activity reaches a peak in the phenoxy series with an electrophilic substituent in the *para* position of the benzene ring and a methyl group in the pyrimidine-6 position. *p*-Chloro and 3,4-dichlorophenyl derivatives are significantly more active than *p*-nitro compounds.

The level of activity in the *p*-chlorophenyl-6-alkyl series reached values of more than 1,000 times the activity of quinine.

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Growing Quartz: Researchers at Antioch College have found that transparent silica glass is the best source material for growing oscillator grade quartz. Alkali halide solutions are the best media; fluoride ion apparently gives better results than other halides.

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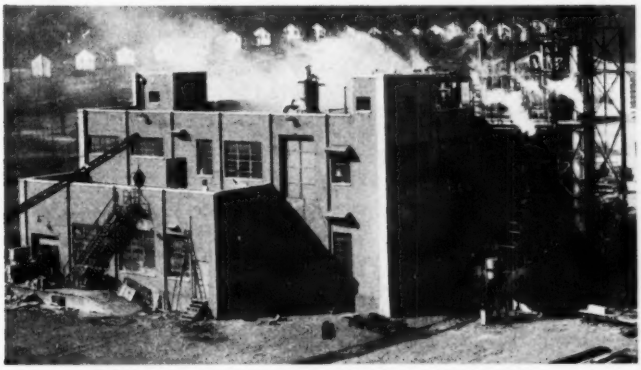
Zinc Separation: British workers report that adsorption on cellulose columns followed by elution with a butanol-hydrochloric acid mixture is effective in separating zinc from lead and other metals.



FINE CHEMICALS: Impervious graphite resists corrosion. . .

Graphite Advance

Two new companies schedule plants for impervious graphite, one for tubes, the other for heat exchangers.

National Carbon, big name in the field, will get capacity boost also—but indirectly.

Come October 1, the chemical industry can look to a new source of impervious graphite equipment. At that time, the newly formed Graphite Specialties Corp., an affiliate of Falls Industries, Solon, Ohio, will bring in its Niagara Falls plant. Initial production will be confined to porous tubes for resin impregnation, but eventually the company hopes to branch out into the equipment field.

For the present, Falls Industries is slated to take the entire output. Tubes will be shipped to Ohio where they will be impregnated with a phenolic resin. Falls Industries will use a portion for manufacturing its own equipment (principally heat exchangers), the rest will be sold to other equipment makers. Plant capacity at Niagara Falls is a carefully guarded company secret. It will probably be on a large scale, however; Graphite Specialties President Roy Zook told CHEMICAL WEEK there will be an "unlimited supply."

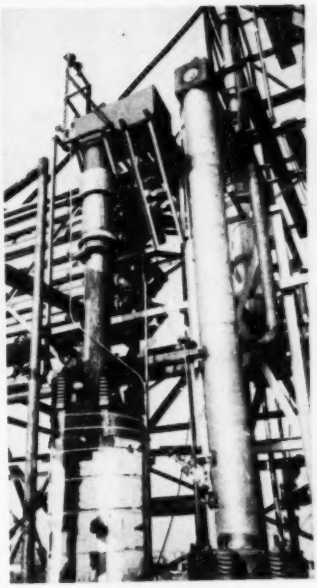
And as the Niagara Falls plant is being readied for production, another new company is pushing plans for an impervious graphite heat exchanger plant in the Chicago area. The British-American Carbon Corp., a joint venture of Great Lakes Carbon Corp. and Powell Duffryn Carbon Products, Ltd. (*CW, Aug. 25*), is putting up the plant which is scheduled for completion in nine months. It will turn out from 50 to 75 large cubic exchangers a month.

National Carbon: The two new plants attest to increased activity in impervious graphite. But National Carbon, pioneer and big name in the field with its Karbate impervious graphite, is due for a boost also.

Its new graphite electrode plant in Columbia, Tenn., is scheduled to start up shortly. That will take some of the pressure off electrode facilities at Clarksburg, W. Va., and Niagara Falls, should make more capacity available for impervious graphite equipment. National says that equipment demands have soared to a point where present capacity is insufficient. This added capacity should help.

National Carbon starts its graphite operations with petroleum coke and coal tar pitch at the Clarksburg and Niagara Falls plants. The material is forced into the plastic state, gas-fired to make it rigid. The resulting amorphous carbon is graphitized in an electric furnace and shipped to the Cleveland plant where it is machined and impregnated. Either of two resins is used for impregnation, depending on the nature of the material that the equipment will encounter. For use with most acids, salt solutions and organic compounds, the impregnant is a phenolic resin: for service with alkalies and oxidizing agents, a modified phenolic is employed.

Why Graphite? Probably the most significant property of impervious graphite is its resistance to chemical attack. Resistance will vary, of course,



. . . speeds chlorinations.

with the temperature and concentration, but impervious graphite equipment is entirely suitable for a host of hard-to-handle chemicals that will be met under normal processing conditions. Some of the applications recommended by National Carbon, with temperature and concentration limits: sulfuric acid, boiling point, 75%; hydrofluoric acid, boiling point, 48%; caustic soda, 275 F, 80%; sodium hypochlorite, boiling point, 25%.

In addition to its resistance, impervious graphite has properties that make it a superior material of construction for many process applications: high thermal conductivity (double to triple that for steel), low thermal expansion, resistance to severe thermal shock, strength as well as resistance to deformation at high temperatures, and freedom from corrosive scale formation.

Where It Goes: Its thermal characteristics make impervious graphite a natural for heat exchangers. National Carbon turns out a complete line—including plate, bayonet, cascade and bundle types.

Another big use for impervious graphite is in hydrochloric absorption towers. In the towers rapid absorption is accompanied by evolution of heat. As a result, when conventional towers are built the acid is discharged from the bottom at temperatures close to the boiling point.

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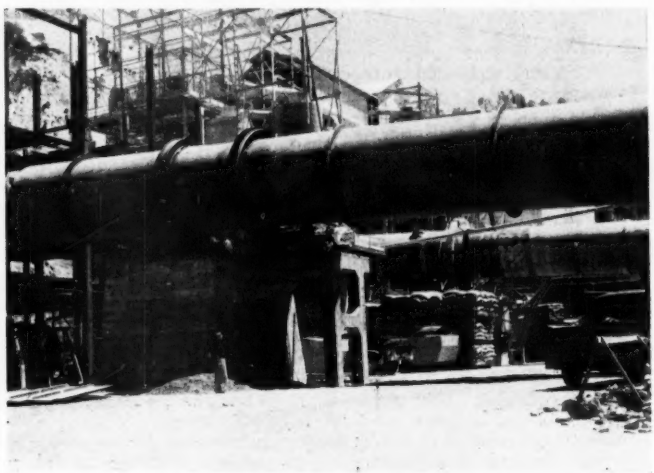
With most construction materials the hot, corrosive acid cannot be tolerated; and before the use of graphite, the trend was to deliberately slow down the rate of absorption. Impervious graphite allows the construction of more efficient towers which entail less maintenance and supervision.

Heat exchangers and absorption towers are but two of the growing applications for impervious graphite. National Carbon makes Karbate impervious graphite pumps and valves, sulfuric acid diluting equipment, circulating steam jets, combustion chambers and burner nozzles, bricks, pipes and fittings. And the company reports that it is impossible to pin the increased demand down to any single category.

Cost Pared: In January, National Carbon managed to pare the cost of its centrifugal pumps so that they were competitive pricewise with pumps made of stainless steel and other corrosion-resistant materials. However, it's not possible to make generalizations on the price of its Karbate impervious graphite equipment. National Carbon says, simply, "In some cases the equipment is competitive with stainless; in some cases, it isn't."



DIATOMITE KILN: Stainless steel liner at cold end licks corrosion.

More Aid for Filters

Production of diatomite filter aids will get a big boost the end of this year. How? At that time Johns-Manville will bring in its huge new rotary kiln at Lompoc, Cal. It will up J-M's capacity, already by far the largest in the country, by a fat 40 per cent.

But boosting output is not all. The company is not just installing a new kiln (10 ft. diam., oil- or gas-fired), but is using a new design as well. Main feature: a stainless steel lining at the cold end to minimize the corrosion—a long standing plague to kiln operators, presumably due to the dehydration of the diatomite at this point, and to the gaseous products from decomposition of organic matter in the ore.

Entire operation consists of calcining the diatomite to temperatures between 1,800-2,000 F, where the crystalline form is changed and the particle size increased. Grade of the diatomite depends mainly on the particle size that results.

Dust Catchers: While it is well known that extensive dust recovery equipment must be used to prevent loss of product, J-M is sitting tight on details of its own designed and developed recovery equipment. However, it is known that cyclone type separators remove the first product from the hot gases, and stocking collectors filter the final traces of diatomite from exit gases.

Market Motive: Reason for J-M's expansion is the usual one: increased markets. According to J-M's Arthur Elsenbast, additional future requirements in the manufacture of antibiotics alone will take an estimated half of the increased Lompoc capacity. In handling the antibiotic "beer," filter aids are a must.

Producers of the more common beer, the brewing industry, are also large consumers of filter aids. About 300 of the 350 U.S. breweries now use filter aids to produce the desirable light lager.

J-M is particularly happy over the

potential market for filter aids in the filtration of both industrial and municipal water supplies. When absolute clarity is desired, leaf-type filters and filter aids are mandatory. Many companies, like the Fox River Paper Co. in Wisconsin, need ultra-clear process water and utilize filter aids to get it. Now filter aids are coming into their own for clarifying drinking water, with nine municipalities using them in leaf filters.*

J-M is not overlooking the corallary to clear water; cleaned-up industrial wastes. This market is just about virgin, and J-M is busily preparing to tap it. With clarification, the water from these wastes can be reused industrially, and more readily purified for municipal water supply. In these times of short water, this is a big selling point for J-M's increased production of filter aids.

Hot Boat Ride

Lower-cost transportation is the aim of Shell's new program for shipping hot, molten bitumen from South America to Europe. Previously bitumen was shipped as a solid with the attendant problems of removal from the container, repacking, and storage. Now the new three-depot system† will overcome these problems by keeping the bitumen liquid at all times.

Long Hot Trip: At the latest installation to be opened, hot (130 C) bitumen will come directly across the Atlantic from Curacao, N.W.I., to Setubal, Portugal, in three specially converted 9,000-ton tankers. Each will carry about 4,000 tons of bitumen in tanks equipped with coils for heating, jacketed lines, and pumps to discharge the bitumen from the vessel.

At the depot the bitumen, still molten after the trip across the Atlantic, is unloaded through heated pipelines to coil-filled bulk receiving tanks by means of heated pumps.

The Setubal depot has two major receiving tanks of 3,800 tons and 2,080 tons capacity, respectively. In addition there are four supplementary tanks of about 90 tons capacity each, from which different grades of bitumen are dispatched. If desired the storage capacity at Setubal can readily be increased to 10,000 tons.

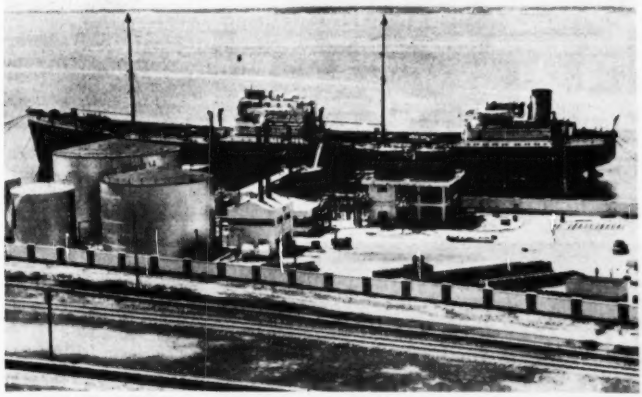
From the depot distribution is made in road-tank wagons, and the bitumen arrives ready for use at temperatures between 130 C and 160 C, depending on the distance travelled.

Time and Money: Transport by truck in liquid form obviates reheating. For application on roads and hydraulic works, the use of cranes and slings for loading onto vessels or trucks is eliminated. Not only does the "hot" Atlantic crossing mean that bitumen can be shipped from the cheapest sources, but it effects a considerable saving in transport, time, and manual work.

The new system will enable Shell to build reserves for emergencies, and provide a much needed speed-up in bitumen supply for Europe's hungry road-building and construction markets.

* Cherry Valley, N.Y., Campbell Hill, Ill., Mounds, Ill., Seal Beach, Cal., and five towns on the Midland-Saginaw pipeline from Lake Huron.

† Second of three planned depots has just been opened at Setubal, Portugal. First plant, at Provestenen, Denmark, went into production early this year; the third will soon go on stream at Dublin, Ireland.



BITUMEN TANKER AT SETUBAL: A "hot" voyage is money in the pocket.

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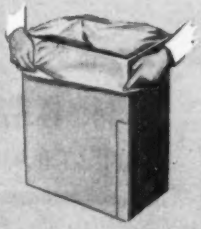

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Change in Emphasis

Dentifrice manufacturers stress therapeutic as well as cosmetic qualities of their products as they incorporate anti-decay ingredients into formulations.

Ammoniated tooth pastes and powders are still the leaders among the newer types, but those containing chlorophyll, penicillin and other chemicals are getting consideration.

Although a flood of new dentifrices was just stayed—at least temporarily—when the Food and Drug Administration refused to permit over-the-counter sale of penicillin dentifrices, the trend to therapeutic products continues. Ammoniated tooth pastes, which surged into the market in 1949, were the first, but there are now dentrifices containing penicillin, chlorophyll and sodium undecylenate on the market. And a chewing gum containing a nitrofuran has recently been reported as effective in reducing tooth decay when chewed after each meal.

Practically every major dentrifice maker was watching to see how Andrew Jergens was going to make out in its request for the FDA to modify its antibiotics certification procedure to permit over-the-counter sale of Dentocillin, its penicillin tooth powder that has been available on a prescription basis. The only claim made for the product is that it reduces tooth decay. This is based on a two-year clinical study made under the direction of Dr. Helmut Zander at Tufts College Dental School which indicated a 55% reduction in decay.

The FDA considered Zander's work in making the decision, concluded that there was not enough evidence to prove such a product safe and efficacious for unrestricted distribution at this time. Presumably the possibility of developing penicillin-resistant microorganisms weighed heavily in the refusal, for a special committee of the National Research Council, to which the problem had been referred, advised against changing the antibiotics monograph on those grounds.

Jergens, the pioneer in this field, can ask for a public hearing at which both the company and the FDA would present evidence on the matter. Should Jergens do so (it has not yet signified such intention) and should the decision still be unfavorable, the company could resort to the Circuit Court of Appeals if it still felt the ruling unreasonable.

Bristol-Myers is the only other company with a penicillin-containing powder—Ipana Penicillin Tooth Powder. This has just joined Dentocillin on the national scene after limited distribution. Other companies, however, were just waiting for the FDA approval to enter the sales battle that undoubtedly would have ensued. And they will remain alerted to take advantage of any change in penicillin dentifrice status that may result from future action by Jergens or the FDA.

Green Stuff: New products without antibiotics are not faced with such a difficult marketing problem. One getting a big play is Pepsodent's Lever's, Chlorogene (*CIW Newsletter, May 12*). Now being test-marketed in four cities, this product has just had its name changed to Chlorodent, presumably to identify it more closely with its use.

Pepsodent is licensed by Rystan Co. (Mount Vernon, N. Y.) which has the patents on such chlorophyll products. This company has its own tooth paste, Chloresium, on the market, but it has no licensee other than Pepsodent.

Out of the ordinary run of anti-decay materials is the active ingredient in Cly-dent: sodium undecylenate. The product of Skin Tested Drug Products (New York), it has been distributed principally in the New York metropolitan area for some time. The company says that research work being carried on at a university for a year and a half shows it to be superior to the ammoniated products. It has a patent pending, plans to expand distribution, but not immediately.

Therapeutic Chew: Another probable candidate for incorporation in tooth pastes or powders is furadroxyl, one of the nitrofurans produced by Eaton Labs. A report of a Northwestern University research team in a recent issue of the *Journal of the American Dental Association* revealed that a significant reduction in tooth decay resulted when a furadroxyl-containing gum was chewed after each meal for 10 minutes. Since the test group contained only 30 persons, however, the work is still considered preliminary.

While the newer anti-caries chemicals are getting the most attention, ammoniated products continue to hold the firm position (one estimate is 15% of the market) they attained so spectacularly. Most of the major companies have such a product, and in keeping with the times, they plug their therapeutic value as well as the long-established "sweet smile insurance" appeal. But they are all on the lookout for better decay stoppers.

NEW DENTIFRICES: Hard and whole as well as bright and shiny.

Three-Way Stretch

Recently completed production line tests of a new automatic adhesive mixing machine, the Visco-Mat, show a savings of over 60% on adhesive costs. Proving ground was the Rinso line of Lever Bros.' Hammond, Ind., plant, where Triangle Package Machinery Co.'s new machine was used to apply glue for both individual packages and shipping cartons.

Though slightly higher in price on a per-pound basis, dehydrated adhesives go farther than liquid adhesives. Ready mixed liquid adhesive sells for about 10¾¢ a pound today. A pound of dehydrated adhesive selling at 11¼¢ will make three pounds of liquid adhesives, cutting costs to 3¾¢ a pound. This three-way stretch applied to the production line means a difference in cost of over 60%—100 gal. (1,050 lb.) of ready-mixed adhesive costs about $113; 350 lb. of dehydrated adhesive will give the same amount at a cost of only $42. At the rate its Hammond plant uses adhesives, Lever Bros. foresees an annual savings of $15,000-18,000.

Plus features of dehydrated adhesives are constant quality, waste reduction, and savings in space for inventory (multiwall bags replace drums). Freight savings come from the lighter shipping containers and the absence of water in the product. Labor costs are less with no drums to clean and return, and a minimum of attention is required for the machine to keep an adequate supply of ready-mixed adhesive on hand shift after shift.

Joint Effort: Triangle developed the Visco-Mat in collaboration with National Starch Products Co. as a means of widening applications of Aquaflakes, National's dehydrated dextrin-type adhesive. Dry adhesive placed in the upper hopper is mixed with a controlled flow of water at intervals to maintain a constant supply of liquid adhesive in the reservoir. The reservior is fitted with high-low level controls which actuate the mixer. The circulating mechanism also controls viscosity, and a selector dial may be set to provide any desired viscosity. Adhesive can be drawn off manually at the machine or delivered to the plant distributing system.

Any dextrin or cold-water soluble adhesive can be used in the machine. In some cases the more constant control has allowed substitution where only animal and cooker glues could be used previously. Not being dehydrated, animal and cooker glues are not used in the machine.

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Waco Plant: Waco, Tex., will be the site of a new insecticide plant to be built by Tobacco By-Products and Chemical Corp., Virginia-Carolina subsidiary. It was selected because of its proximity to cotton, vegetable and fruit crops of the Southwest.

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Soluble Terramycin Tablets: Chas. Pfizer has introduced soluble terramycin tablets, a new form designed for use by pharmacists in preparing a wide range of antibiotic medications such as dressings, cough syrups and topical solutions.

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Kudos for DDT: The American Medical Association (in an editorial in its current *Journal*) credits DDT with being the first efficient and economical means of controlling malaria; sees in spectacular results already achieved the possibility of eradicating malaria from large sections of the country.

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Hard Shell Finish: Plastone Co. (Chicago), which started out to improve its silicone auto polish, Plastone, has ended up with a new product it calls Turtle Wax. It is claimed to have a new suspending agent that gives long shelf life to the carnauba wax-silicone suspension. (The familiar "shake well before using" warning is not on the bottle.) A pint sells for $2.

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Reichhold Addition: Reichhold Chemicals will build a $1 million addition to the $1 million plant it has under construction in Charlotte, N. C. Principal products of the addition will be crease-proofing synthetic resins for the textile industry and soybean glues for the plywood industry. It is expected to take about nine months to complete construction.

The original project, to begin operations in about two months, will produce synthetic resins for the plywood, paper, pulp, furniture and enameling industries. For the paper industry, wet-strength resins will be emphasized.

Included in the facilities, when all construction has been completed, will be 24 storage tanks, averaging about 35,000 gal. capacity each.

•

Tubed Car Wash: Main feature of WonWash, new liquid car washing detergent that Swaco Products (Hollis, N.Y.) is introducing in department stores and independent accessory dealers, is its package: a tube 2 in. long containing 5 c.c. of detergent concentrate. It sells for a dime. Said to be equally effective in soft or hard water, it will be nationally distributed through jobbers in hardware, drug and sundry fields.

•

Arco Bought: American-Marietta Co. has just acquired Arco Co., Cleveland manufacturer of automotive refinishing materials. It will be operated as a subsidiary.

•

No Neutralizer: Toni Co. is introducing another type of home permanent kit which contains an ingredient that eliminates the need of a neutralizer. Called Prom, it is the product of the recently-formed Prom Cosmetics, will sell for $1.50. Both Toni and Prom Cosmetics are subsidiaries of Gillette Safety Razor Co.

•

Dye Fixatives: Emkay Chemical Co. (Elizabeth, N.J.) has just put into production two new dye-fixing agents, Emkafix R and Emkafix C. They are recommended as after-treatments for direct-dyed or printed cottons and rayons.

•

Hot or Cold: Duo-Pac, a light-weight, sealed Vinylite bag containing diethylene glycol which serves as either a hot water bottle or ice bag, has just been introduced by Duo-Pac Inc. (New York). It requires no refilling. To use, it is placed in hot water for five minutes or in the refrigerator freezer until it becomes slushy.

•

Synthetic Coolant: Ottacut, a non-petroleum synthetic coolant for metal cutting, is now being introduced in batch tanks at Ottawa Chemical Co. (Toledo). Among undisclosed ingredients, it contains PCMX, a germicide (*CW, June 9*); pine oil for odor; and a synthetic anti-rust agent which Sol Boyk, Ottawa head, developed and which is being patented for marketing on its own merits in the future. Ottacut is being sold for $2.50 a gallon in barrel lots; has shown up well in tests by metal-working firms.

•

Insecticide Co.: Farmers Insecticide Co., Inc., Rosehill, N.C., has been organized with capital stock of $100,000 to deal in all types of insecticides.

•

Cold Bleached Shellac: Acme Shellac, Newark, N. J., has developed a bleaching process for shellac which lengthens the life of the material by eliminating high-temperature processing. The process improves color, toughness, solubility and stability, also gives greater uniformity.

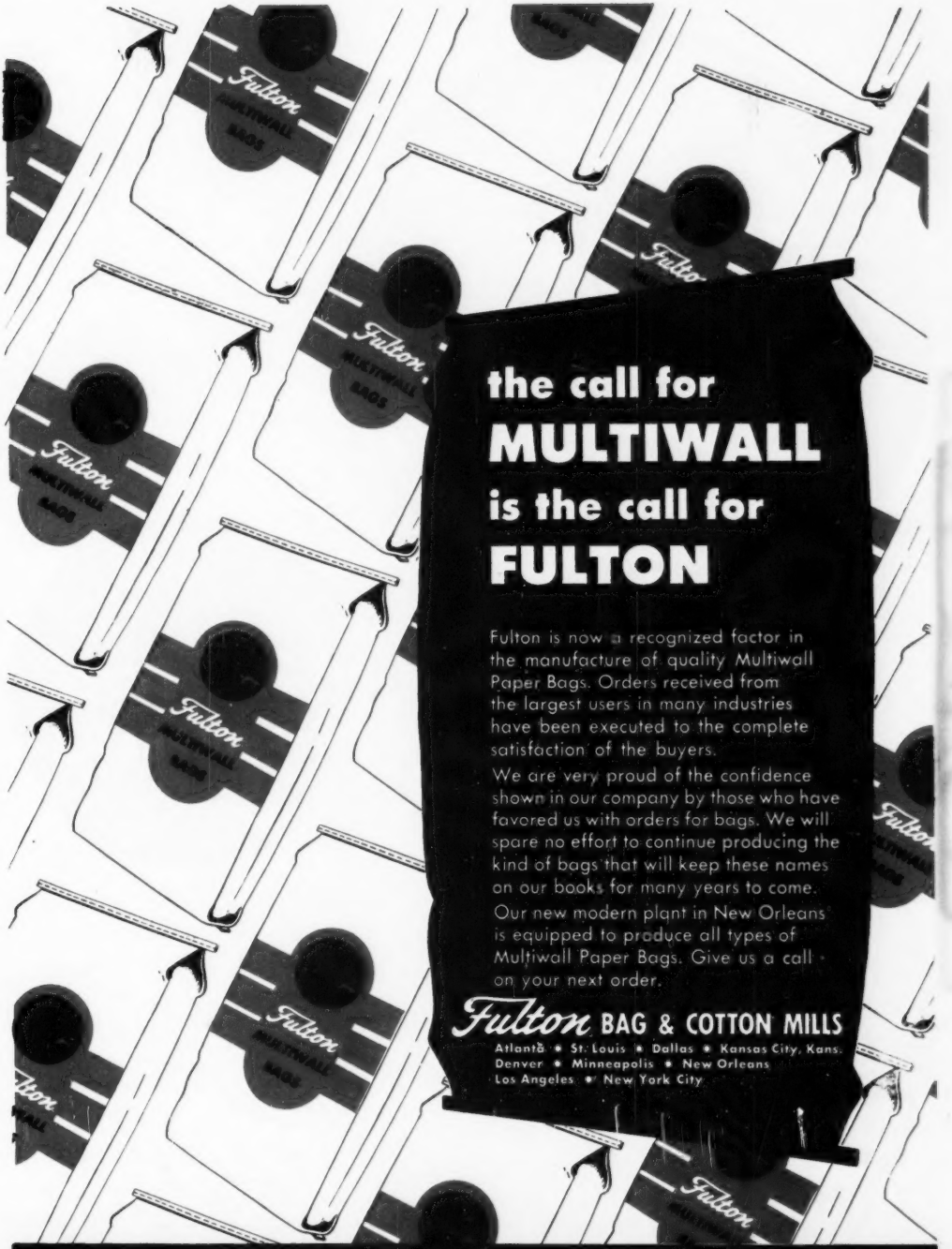
Key to the process is dissolving the shellac in sodium carbonate solution, bleaching the solution with sodium hypochlorite to a standard color, precipitating with sulphuric and agglomerating by heating. Driers operate with cold air.

•

Metal Checking with Dyes: Turco Products, Inc., Los Angeles, has been given exclusive license to manufacture and market materials used in a dye penetrant metal inspection process developed by Northrop Aircraft. The process—trade name Dy-Chek—depends on controlled use of a red dye to indicate the presence in metal of cracks or flaws too small to be seen with a magnifying glass. The dye is made to "bleed" in scarlet lines against a white background.

•

Scour-Bleach: Scouring and mild bleaching of nylon and rayon in one operation are made possible by a new compound being marketed to commercial finishers by Richmond Oil, Soap & Chemical Co. (Philadelphia). It is called Scour Bleach No. 2, is used to clean up handling marks and oil stains. It differs from an older product, Scour Bleach No. 1, in that instead of a synthetic detergent, it contains soap, preferred by some finishers for carrying off mineral oils.



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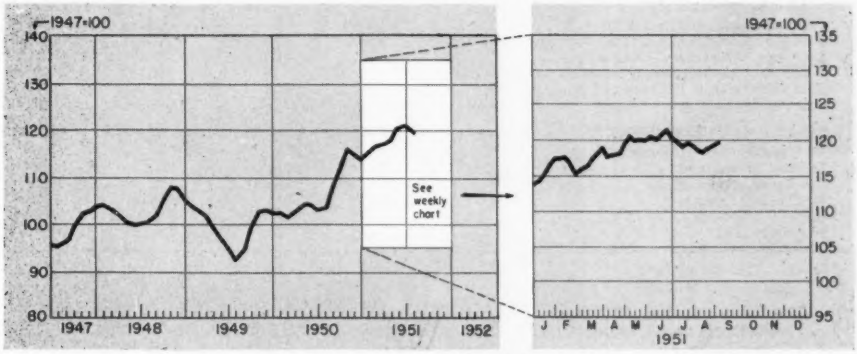
CHEMICAL MARKETS . . .



CW Index of Chemical Output—Basis: Total Man-Hours Worked in Selected Chemical Industries

More alcohol will be needed to make more synthetic rubber. That's the main reason why the Reconstruction Finance Corporation boosted the price of GR-S synthetic by 1½¢ to 26¢ a pound, the second hike within a year. Another factor: mounting production costs.

Production goals have been raised from 760,000 to 860,000 long tons. With butadiene from petroleum going full tilt, more will perforce be made via the higher cost alternate.

As a warm-up for heavier reliance on alcohol, the Office of Rubber Reserve has just signed a contract to purchase 31 million gallons at 73.3¢ a gallon. ORR won't find alcohol supplies a problem—storage tanks bulge.

More synthetic rubber will keep the pressure on styrene supplies for other uses. Examples: polystyrene, paint latex, shoe soles. Substantial relief can't be expected much before this time next year.

Other plastics consumers can find solace in the survey made by the National Production Authority on synthetic resin coatings. Outlook: adequate amounts of urea and vinyl resins. Castor oil supply will be fair to poor depending on what it takes to satisfy the military. But civilian industry is advised not to make plans that call for ethyl cellulose.

Output of many electrochemical products in the Pacific Northwest may be seriously curbed this winter. Reason: shortage of Columbia River electric power. Unless winter flows are unusually high, many intermittent power takers, including some vital defense industries, will be hamstrung.

Products facing cutbacks: phosphorus, chlorine-caustic, carbide.

Both pigments and pesticides will soon feel the impact of labor strife in copper and lead mines, unless an early settlement is made. And equipment-makers (and users) also have cause for worry. Both metals already none-too-plentiful, are vital to chemical equipment manufacture.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	120.3	120.0	110.8
Bituminous Coal Production (Daily Average, 1000 Tons)	1,730.0	1,715.0	1,830.0
Steel Ingot Production (Thousand Tons)	2,002.0	1,995.0	1,873.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	140.1	140.1	124.0
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	253.8	253.1	185.7
Chemical Process Industries Construction Awards (Eng. News-Record)	$62,835,000	$31,418,000	$54,485,000
MONTHLY BUSINESS PRODUCTION — Production (1935=100)	**Latest Month**	**Preceding Month**	**Year Ago**
All Manufacturing & Mining	213	222	196
Durable Manufactures	263	275	235
Non-Durable Manufactures	190	198	181
All Chemical Products	306	302	263
Industrial Chemicals	558	548	453
By-Product Coke	177	179	170

Thus far, a heavier influx of chemicals and chemical products from overseas, expected under the kindlier Torquay tariff agreement, hasn't materialized. Actually imports have been on the skids. Reasons: Higher manufacturing costs of many foreign chemical products have tended to offset the tariff cuts, and European producers can't satisfy their own markets at home.

This lag in imports maintains the trend revealed in the latest foreign trade figures available from the Department of Commerce. Though value of coal tar products brought in did increase from $2.6 million in June to $4.2 million in July, industrial chemical imports dwindled from $13.4 million to $9.7 million; medicinals and pharmaceuticals fell off from $1.5 million to $0.9 million.

Similar downward trends can be noted in fertilizer materials and vegetable oils and fats of the inedible variety.

During the same period, exports increased in almost every category, except for a slackening in fertilizer shipments from $4.5 million to $3.9 million.

But look for a reversal in these trends in the next few months. By that time, the burgeoning seasonal demand from civilian industry and the steady growth of military needs will keep more U.S. chemical products at home. Also around that time, more imports can be expected from Germany, which will sign the Torquay pact about the end of September.

Some current supply easing is noted this week in a number of chemicals. Soda ash orders are filled without delay, and caustic soda prices at resale are still falling. Resale caustic is now 4½¢ a pound, in sharp contrast to the prevailing 9-10¢ some four months ago.

Citric acid supply is temporarily better because of seasonal factors and more production from Chas. Pfizer & Co., and Miles Laboratories.

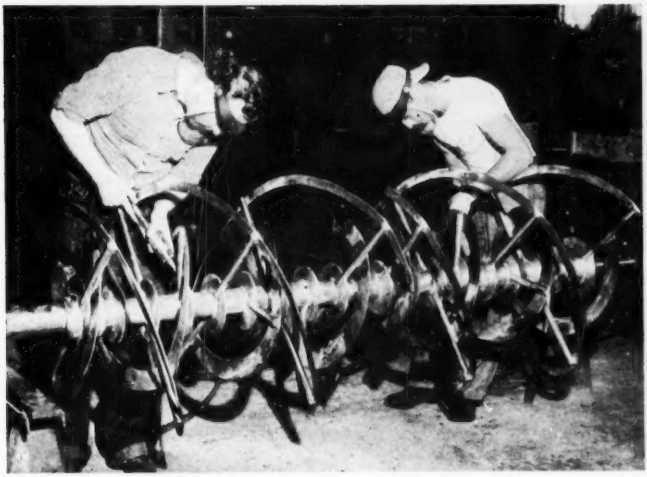
More extensive uses for capryl alcohol are hoped for from the reduction of prices this week by Rohm & Haas. The new price in tank cars is 19½¢ a pound compared to the previous value of 28½¢.

Capryl alcohol now finds outlets in a diversity of applications. Among them: plasticizers, urea-type coating resins, oil-soluble additives.

SELECTED CHEMICAL MARKET PRICE CHANGES — Week Ending September 3, 1951

		Change	New Price		Change	New Price
UP						
None						
DOWN						
Capryl alcohol, tankcars		$ .09	$ .195	Quicksilver, 76 lb. flask	$3.00	$196.00

All prices per lb. unless quantity is stated.



LUBRICANTS: More machines run longer with more barium.

Barium Supply Scale Tips

Higher production of barium compounds is foreseen as producers move to cope with shortages. TV cutbacks will also afford relief.

Widened uses loom for barium chemicals. Fastest-growing: oil additives and greases.

Imported material won't be much help in relieving domestic supplies. Reasons: too little and too costly.

Some definite headway can be reported this week on the barium chemicals supply problem. Two companies have already signified their intention to boost production, while others are not unaware of the growing market. Besides the slated output increase, immediate supply relief has been forthcoming from cutbacks in the manufacture of television sets, which have preempted large supplies of barium carbonate.

The current outlook is considerably altered from the market status only a few weeks back. A CW survey at that time among purchasing agents found that barium chemicals were high on the list of commodities buyers needed and couldn't get enough of. The improvement so far is still on a minor scale, but the prospect of more abundance near at hand will give them something to look forward to.

More for Two: The two producers leading the expansion are Barium Reduction Corp., South Charleston, W. Va., and Westvaco Chemical Division. Westvaco is awaiting approval from the Defense Production Administration for a certificate of necessity for new facilities at Modesto, Calif. The plant will make use of Nevada barytes, a naturally-occurring barium sulfate from which most other barium compounds are derived.

Other producers' interest runs high. In this group are such longtime firms as Chicago Copper and Chemical Co., Blue Island, Ill. Barium & Chemicals, Inc., Willoughby, Ohio; and several others.

Imports Trickle: Little help from overseas supplies can be expected before the new production comes in. European producers have found markets close to home, and any quantities available for the U.S. are small in quantity and high-priced. Imported barium carbonate in recent months has been quoted at nearly double U.S. selling price of some $85 a ton. Much of the imported material lately is witherite, a barium carbonate ore obtained chiefly from England.

Many Ways: Most barium chemicals today, however, are made from the synthetic carbonate, in turn a product of barium sulfate reduction. This high-purity carbonate has been riding the crest of the television boom. Fortunately for industrial consumers, NPA put a crimp in TV output, prevented a real famine from developing in barium compounds.

However, so many other fast-growing uses have come up in the last few years that producers still haven't been able to handle them in full. Biggest industrial factor in the demand climb: wider preference for barium greases and for barium additives in lube oils for higher detergency. Barium compounds have also been called upon to supplant hard-to-find lead salts in some types of glass, and barium titanate has made fast progress for use in some high-voltage insulators.

New Prospects: With these new uses for barium products added to the long-established outlets in drilling mud, pigments, and brick treating, buying pressure for barium chemicals won't be quickly relieved. But, in view of TV cutbacks and more production on the way, purchasing agents may soon be able to relegate barium chemicals to the "easier" category.

Fluoride Relief

Producers of sodium silicofluoride, which is used in water fluoridation, have had their requests for price relief answered in Washington. Last week the Office of Price Stabilization put the chemical under a special ruling designed to eliminate hardships caused by extremely low prices in effect at the time prices were frozen.

Reason for the whole price muddle came about because of the interrelationship between main and by-products. Principal source of the silicofluorides is phosphate rock, a large percentage of which if fluorapatite. During the production of superphosphate for fertilizer, the salts are formed through interaction of hydrofluoric acid, silicon dioxide and water.

In past years these compounds have been definite stepchildren of the fertilizer industry. Silicofluorides have been sold for practically nothing, the costs of production being borne by fertilizer ingredient buyers.

But the snowballing water fluoridation process (*CW, July 7*), coupled with demands for the silicofluorides in other fields such as insecticides, has changed the attitude of fertilizer producers. While the volume of fluorides will never even approach the volume of phosphate sales, they're a nice piece of extra business, Their thoughts: Let the by-products pay their own overhead.

The price now allowed to silicofluoride producers ranges from 7 cents per pound to 8.4 cents, depending on

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whether it is packed in bags, barrels or drums. For sales in lcl. or ltl. lots, producers can add five mills to these selling prices.

Since most of the major producers' ceiling prices ranged around 5 cents per pound, the 2-cent increase will definitely encourage production. (Those producers whose GCPR ceilings were above the new 7-cent level, however, may still charge their old prices.)

Production: Present production of the compounds is estimated at about 40,000 tons per year, and though it's believed that fluoridation of all the water in the country wouldn't use over 35,000 tons, some increases in production are undoubtedly forthcoming. Total future use of the compounds would definitely exceed present production.

Sodium silicofluoride and hydrofluosilicic acid, its parent, are leading contenders for the water fluoridation crown. From the standpoint of both cost and relative toxicity, they come out best. Despite its lower toxicity than straight sodium fluoride, the proportion of silicofluoride in water must still be controlled within rigid limits.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quantity	Item
General Services Administration, 620 Post Office and Court House, Boston 9, Massachusetts:			
September 13	(BO-W-1-23-52)		Wax, floor, water emulsion in 55 gallon drums
	(BO-W-1-23-52)		Soap, paste, general cleaning/for automobiles and floors/in approx. 100 pound substantial metal container
	(BO-W-1-23-52)		Soap, chip, laundry, light color, (Fed. spec. No. P-S-566A) in approx. 150 pound barrel
			Wax, floor, paste, type 11, (Fed. spec. P-W-158 and Amendment 1) in 30-pound cans, semi-solid
Regional Information Officer, Region 3, General Services Administration, Washington 25, D.C.:			
September 10	5G-2504-R	1700 gal	Paint, titanium-lead-zinc and oil, exterior, ready mixed, white, class B, (Fed. spec. TT-P-102 dated March 21, 1951) 5 gal. containers/unit gallon/Item No. 52-P-4516-955. S.R. No. W-868
Regional Information Officer, Region 2, General Services Administration, 250 Hudson Street, New York 13, N.Y.:			
September 12	(NY-2B-30456)	235 cs	Soap, hand grit
Purchasing Officer, Bureau of Engraving and Printing, 14th & C Streets, S.W., Washington 25, D.C.:			
September 12	BEP-55	870 lbs approx.	Dichlorodifluoromethane (freon-12) six 145-pound cylinders
CO Armed Services, Medical Procurement Agency, 84 Sands St., Brooklyn 1, New York:			
September 10	150B	4254 can	Barium sulfate-10-lb-USP
	150B	5256 can	Bentonite-1 lb.-USP
	150B	8928 btl	Benzene-1 lb-ACS-(benzol)
	150B	17448 can	Benzoin tincture-compound-1 APT-USP
	150B	264 can	Calcium carbonate-marble-chips-1-lb
	150B	8928 btl	Camphor-¼-lb-USP
Commanding General, New York Quartermaster Procurement Agency, 111 East 16th St., New York, N.Y.:			
September 24	52-141B	5358800 lbs	Trisodium Phosphate, technical
Aviation Supply Office, 700 Robbins Ave., Philadelphia, Pa.:			
September 10	154135B	187110 gal	Alcohol, specially denatured ethyl, Military Spec. Mil A 6091
General Services Administration, 1114 Commerce St., Dallas, Tex.:			
September 11	FW-17036	1116 lb	Oil, linseed, TT-O-369
		240 qt	Pigment in oil, TT-P-381-Amendment 2
		600 gal	Turpentine, TT-P-381-Amendment 1
		520 gal	Varnish, TT-V-121C, TT-V-71A

GOVERNMENT AWARDS

Item	Supplier	Location
Aviation Supply Office, 700 Robbins Ave., Philadelphia 11, Pa.:		
Enamel, semi-gloss, rapid drying	Reliance Varnish Co.	Louisville, Ky.
Glass fibers, silicon coated	Owens-Corning Fiber Glass Corp.	Toledo, Ohio
Bureau of Ordnance, Washington 25, D.C.:		
Cellulose acetate inhibiting tape	Celanese Corp. of Amer.	Newark, N.J.
Armed Services Medical Procurement Agency, 84 Sands St., Brooklyn 1, New York:		
Cortisone acetate injection, cortisone acetate tables	Merck & Co. Inc.	Rahway, New Jersey
Alcohol, alcohol, dehydrated Alcohol	U.S. Ind. Chemicals Inc. Lac Chemicals, Inc	Culver City, Calif.
Penicillin G. potassium, crystalline tablets	Eli Lilly & Co.	Indianapolis, Ind
Penicillin G. potassium crystalline tablets	Abbott Labs.	North Chicago, Ill.

BOOKS.....

Physical Biochemistry, second edition, by Henry B. Bull. John Wiley & Sons, Inc., New York, N.Y.; ix+355 pp., $5.75.

Guided by the belief that physical chemistry provides the best framework for the integration of diverse scientific and medical knowledge, the author outlines his subject in a selective manner. Since he is writing specifically for the student of the biological sciences, he stresses the importance of understanding physical phenomena in interpreting living systems; and his subject matter is chosen to fall in this line of thought. Discussed here are modern methods and instruments of research such as electrophoresis, light scatter, and the use of isotopes as tracer elements.

Briefly Listed

SYMPOSIUM ON METHODS OF MEASURING VISCOSITY AT HIGH RATES OF SHEAR, 48-p. ASTM report having as its objective the finding of a suitable method for testing viscosity at high rates of shear of various additives used in lubricants and fluids; two new methods are outlined along with their performance results. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., $1.35.

MEETINGS..

Natl. Instr. Conf. & Exhibit, Sam Houston Coliseum, Houston, Texas, September 10-14.

Natl. Petroleum Assn., annual meeting, Traymore Hotel, Atlantic City, N. J., September 12-14.

Amer. Inst. of Chem. Engineers, national meeting, Sheraton Hotel, Rochester, N.Y., September 16-19.

Conf. on Ind. Experimentation, Columbia campus, Columbia Univ., New York, N.Y., September 17-21.

Natl. Mineral Feeds Assn., annual meeting, Bismark Hotel, Chicago, Ill., September 17-18.

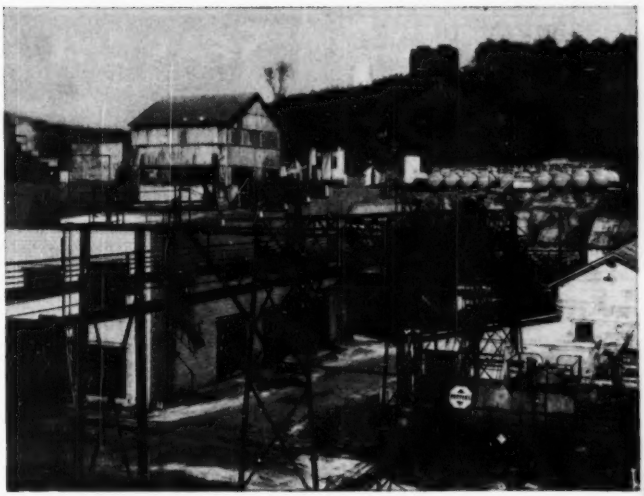
Food Drug & Cosmetic Law Div., Amer. Bar Assn., annual meeting, New York Univ. Law Center, New York, N.Y., September 19-20.

Fundamental Research Conf., national convention, Appleton, Wis., September 19-21.

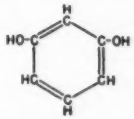
Drug, Chem. & Allied Trades Sect., New York Bd. of Trade, annual meeting, Shawnee-on-Delaware, Pa., September 20-22.

PICTURES IN THIS ISSUE:

Cover (top)—Hans Baskin, McGraw-Hill; p. 13—American Cyanamid Co.; p. 22—Bucher Engraving Co.; p. 29— (left & right)—Tennessee Products & Chemical Corp.



More Resorcinol for Defense!



...Koppers expands its production facilities

● Through expanding production facilities, our Chemical Division plans to manufacture more Resorcinol. Distribution of Koppers Resorcinol is now governed by Schedule 6 under NPA Order M-45.

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Koppers Resorcinol is manufactured in two grades. Koppers Resorcinol, Technical, for most chemical manufacturing and processing use, is produced in flake form with a minimum purity of 98.5%. Koppers Resorcinol, U.S.P., for medicinal and pharmaceutical applications, is in the form of fine crystals with a minimum purity of 99.5%.

FOR FURTHER INFORMATION, send for Bulletin C-9-124. This Bulletin describes many of the interesting and unusual reactions of Resorcinol, as well as its physical properties, chemical properties and uses.

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MAKES IT HANDY

Products and literature in this issue are listed on these pages. There are three indexes. (1) Editorial items on new products, new equipment, new literature; (2) products advertised. (3) The index of advertisers is on the following page.

THE NUMBERS

Advertisements:—There is a page number on the coupon for each advertisement. Before the number, may appear, L, R, T, B (left, right, top, bottom), locating the ad on the page; small letters following (a,b,c) indicate additional products in the advertisement.

Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

EDITORIAL ITEMS

For more data, circle number on coupon

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Mail to Chemical Week, 330 W. 42nd St., N. Y. 18, N. Y.

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BOOKLETS . . . .

Chemicals

*** Caustic Soda**

24-p. bulletin on caustic soda divided into four sections which deal with the topics of purchase considerations, handling and storage, equipment design and technical data. The equipment design section is made up so as to aid in the solution of problems of engineering, construction and maintenance personnel, contains charts and tables showing freezing point, specific gravity, density and other properties. Pennsalt Chemicals, 1000 Widener Bldg., Philadelphia, Pa.

Phosphorescent, Fluorescent Pigments

Chart tabulating data on the various pigments such as color, afterglow, fluorescence, specific gravity and more specific properties; also given are suggestions for application. Rhode Island Laboratories, Inc.

Phosphoric Acid Cleaning Compound

Selection chart listing various phosphoric acid metal cleaners and rust removers with reference to strength, temperature limits, rust and oil removal, etc.; on the other side of chart notes on sequence of operations and equipment required for each process are outlined. American Chemical Paint Co.

Equipment

Vibrating Screen

20-p. brochure illustrating and describing two types of vibrating screens—one for dry-screening of light and fine materials, the other for high speed separation of solids from liquids; data presented includes dimension tables, weights, horsepower requirements along with recommendations for selection of screens. Installation photos illustrate sizing, scalping, removing foreign matter, etc. Link Belt Co.

Nickel Welding

32-p. technical bulletin on the resistance welding of nickel and high nickel alloys presents tables on mechanical properties, chemical compositions, recommended conditions for welding and other data. The various sections are divided into topics dealing with spot welding, projection welding, seam welding, flash welding and resistance brazing. The International Nickel Co.

Electrical Measurement

35-p. catalog consisting of various bulletins dealing with instruments for electrical measurement and control—contact meter-relays, controls, pyrometers and panel meters and relays; sizes, ranges, prices and additional technical data are listed plus installation and operating instructions. Assembly Products Inc.

Rubber Processing

12-p. catalog pictorially describing company's plant facilities, products and services; illustrated here are steps in the compounding and preparing of rubber for processing, rubber lined tanks and pressure vessels, standard Army, Navy, Air Force insulated parts, etc. Automotive Rubber Co., Inc.

Purifiers

4-p. bulletin dealing with functions of nine types of purifiers for entrainment separation in air, steam vapor, gas applications in power generation, petroleum refining, chemical and food processing fields. The Centrifix Corp.

Steam-Traps Selector

20-p. bulletin listing common process and industrial equipment alphabetically with trap selection tables given for each type; trap capacities are shown in terms relative to the equipment and for operating conditions normally prevailing. Yarnall-Waring Co.

Silica Cement

4-p. descriptive bulletin devoted to silica cement for use in laying silica refractories and recommended for poured or trammeled joints; photos illustrate effect of heat treatment, refractoriness test, troweling properties, etc. Harbison-Walker Refractories Co.

Universal Tester

4-p. bulletin presenting the design features of the firm's multi-low-range tester, a load measuring device which operates by means of a calibrated pendulum. W. C. Dillon & Co., Inc.

General

Employee Retirement Plans

17-p. booklet presenting employee retirement plans based on deferred profit sharing, describing the advantages of these plans and explaining the essential requirements and procedure for qualifying them with the Internal Revenue Department. Wellington Fund.

Military Contracts

8-p. sub-contracting facilities booklet dealing with facilities of interest to military contract holders from the viewpoint of the company as a sub-contractor making plastics, special-purpose materials and offering research, development and fabricating services. Rogers Corp.

Production Engineering

8-p. bulletin describing Institute's production engineering research along three lines—predesign evaluation of materials and methods, product development and development of production equipment; Institute is non-profit organization specializing in conducting research as service to industry. Battelle Memorial Institute.

* Request must be made to company on business letterhead.

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ARMOUR *Chemical Division*

Fatty Acids
Long-Chain Fatty Acid Derivatives
Industrial Oils

New process produces improved Neo-Fat 3-R for better alkyds

Armour's exclusive low temperature solvent crystallization process is not only the source of many new products, but it is also the key to improved products. An example is found in the case of Neo-Fat 3-R – a fatty acid with high linoleic acid content for better alkyds.

Lower Titer (only 5°C) provides a homogeneous product that insures uniformity in your alkyd formulations. Even in the winter, after outside storage, Neo-Fat 3-R requires a temperature of only 41°F to liquefy . . . thereby eliminating the necessity for a "hot room." And new Neo-Fat 3-R has an excellent color – Gardner 1-2.

Faster Drying—Alkyds formulated with Neo-Fat 3-R dry much harder and faster. A tack-free, air-dry film is formed in 1½ hours . . . a maximum of H pencil-hardness is obtained in approximately 24 hours.

Non-Yellowing — Improved Neo-Fat 3-R is a superior fatty acid designed specifically for non-yellowing modified alkyd resin type enamels and varnishes. The high linoleic acid content and absence of linolenic acid makes solvent crystallized Neo-Fat 3-R an outstanding raw material for producing clean, long lasting whites.

Improved Neo-Fat 3-R is easy to formulate, easy to cook. Its excellent kettle behavior can be utilized in short, medium or long oil alkyd formulation.

Improved Neo-Fat 3-R is also applicable to paper-sizing compounds, for use in lubricants, printing inks, emulsions, etc. Generally speaking, in the resin field, Neo-Fat 3-R offers manufacturers a better raw material, uniform in color and fatty acid composition, and superior to natural oils in most respects.

New and improved Neo-Fat 3-R is available for prompt shipment in 55 gal. drums and aluminum tank cars. Write today for a sample of Neo-Fat 3-R – see for yourself what this superior solvent crystallized product can do for you.

Specifications Neo-Fat 3-R

	Min.	*Max.*
Iodine Number	140	143
Acid Value	198	202
Titer, °C	—	5
Color		
Lovibond – 5¼"	—	0.8R-8Y
Gardner, 1933	—	2
Unsaponifiable	—	0.5%
Moisture	—	0.5%
Appearance	clear	brilliant

Approximate composition

Linoleic Acid	60%
Oleic Acid	40%
Saturated Acid	trace

Arquad 2C kills bacteria and prevents corrosion in water-flooding systems

Since the introduction of water-flooding methods in secondary oil recovery, producers have had two major maintenance problems . . . *corrosion* of metal equipment and *plugging* of injection wells. Now, Armour and Company offers a new field tested product that answers both problems and is available at low cost. As little as 5 to 10 ppm. of Arquad 2C will check the growth of bacteria and give immediate, as well as residual, protection against corrosion.

Arquad 2C, a dialkyl dimethyl ammonium chloride, is a quaternary cationic surface active agent which protects metal in contact with corrosive waters by plating out as a thin film. Its powerful bactericidal properties have been verified by extensive laboratory and field tests. Arquad 2C is compatible with and soluble in all types of water, both fresh and brine – can be used in either acid or alkaline waters without danger of precipitation and is available for prompt shipment in 60% active solution in isopropyl alcohol.

Arquad 2C can help you maintain high water injection rates and obtain greater yields by controlling the formation of such plugging agents as corrosion products and bacteria. Arquad 2C is especially engineered for your use in secondary recovery pressure maintenance, and water disposal operations.

Write today for complete information, engineering service or consultation.

New hard high melting wax excellent Carnauba extender

With the cost of Carnauba wax running around $1.30 per pound, manufacturers are looking for reliable and economical substitutes and extenders. In many industrial applications a satisfactory solution to this problem has been found by using Armour's Armowax.

While Armowax is not the equivalent of Carnauba, it is in the hard wax classification. Armowax is made entirely of domestic materials and because it is a synthetic chemical it can be controlled to give a constant quality product.

Armowax is a brittle, conchoidal fracture, high-melting nitrogen-containing synthetic wax. It is resistant to acid and alkalis, has a light tan color and an acid value of approximately 10. Armowax has approximately the same penetration as Carnauba. Its melting point is 132°C, its Saponification Value is approximately 17 and its Flash Point is 250°C. Armowax is soluble in oleum spirits, Stoddard solvents, VM&P naptha, turpentine, butanal, methyl or butyl cellosolve, toluene, and xylene at elevated temperatures. At room temperature, Armowax has limited solubility in most common solvents.

Because of its versatility in many non-polish hard wax formulations, Armowax can often be used as either a substitute or extender for Carnauba – particularly in industrial applications. Its availability and extremely low cost have already been used to advantage by many manufacturers. Write today for samples and additional information. Armowax is also available in powdered form at slight additional cost.

Mail this Coupon

Please send additional information on

- .....
- .....

Name..... *Title*.....

Firm.....

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ARMOUR *Chemical Division*

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1357 W. 31st St., Chicago 9, Ill.

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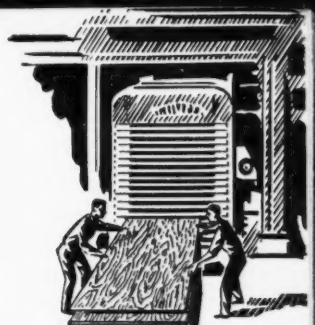

Production of high quality, properly bonded plywoods requires, above all, reliable resin adhesives. The specific use of the plywood determines whether a resorcinol-, phenol-, melamine- or urea-formaldehyde resin is most suitable. All of these resins require exacting formulation with chemicals of dependable uniformity and purity.

Heyden Formaldehyde—manufactured under rigid laboratory control from raw materials constantly checked for high purity—assures uniformly fine quality in the finished product, whether it be plywood, adhesives, plastics, paper, textiles, dyes or a hundred and one other critical materials. It is a clear, colorless solution assaying not less than 37% by weight—produced as Formaldehyde Solution N.F. or as Methanol-free Formaldehyde. It is shipped in container sizes to suit your needs —tank cars, tank trucks, drums, carboys and bottles.

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Resorcinol • Salicylates • Salicylic Acid • Streptomycin

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